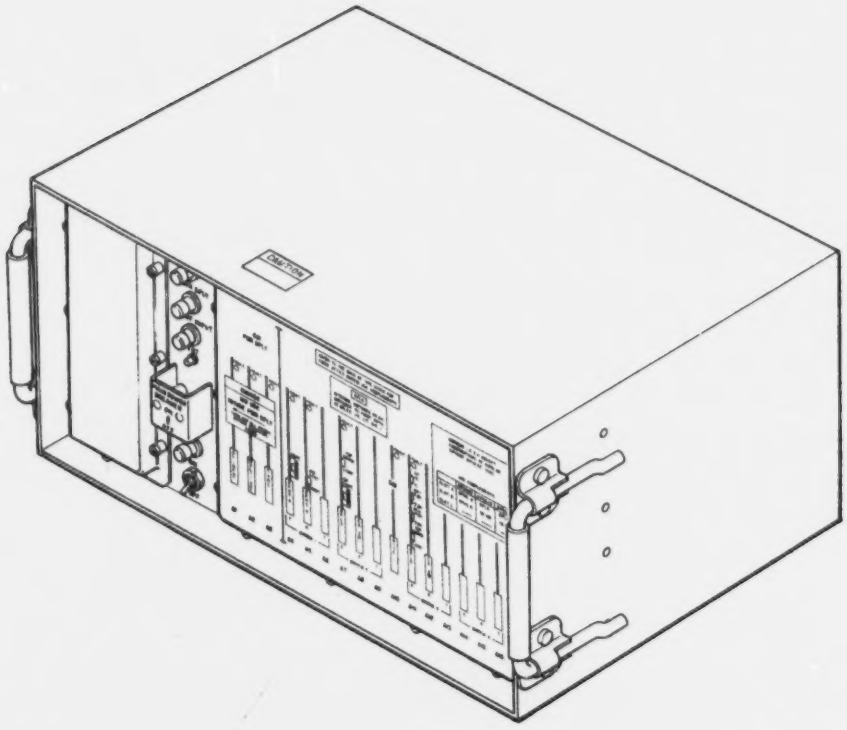
11:5805-705-12

ARMY TM 11-5805-705-12
NAVY EE163-EG-OMI-010/E154 MD1026
AIR FORCE TO 31W2-2G-321
MARINE CORPS TM 08761A-12/1

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL



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DIGITAL DATA MODEM

MD-1026(P)/G

(NSN 5820-01-145-4925)

DEPARTMENTS OF THE ARMY, THE NAVY, AND THE AIR FORCE AND THE MARINE CORPS

17 SEPTEMBER 1984

D 101.11:

READEX FICHE best copy available

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4. SEND FOR HELP AS SOON AS POSSIBLE

5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

HIGH VOLTAGE

The high voltage used in this equipment can kill on contact. Observe the following safety precautions:

- **Ground the Equipment** — Before connecting primary power or the signal cables, connect a heavy gage copper wire from the ground lug on the rear panel to earth ground. Do not remove this wire until the signal cables and primary power have been disconnected.
- **Avoid the Power Input** — Be careful not to contact the 115-volt ac input connections when installing or servicing the equipment.
- **Do Not Service Alone** — Never work on the equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who can administer first aid.
- **Use One Hand** — Where possible, use only one hand to service the equipment. Keep the other hand away to reduce the hazard of current flowing through the vital organs of the body.

CLEANING SOLVENT

The fumes of trichlorotrifluoroethane used for cleaning this equipment can cause severe irritation or injury. Observe the following safety precautions:

- **Ventilate** — Use only outside or in well ventilated areas and avoid breathing the fumes.
- **No Smoking** — Do not smoke while using and do not use near an open flame or hot surface. Trichlorotrifluoroethane does not burn but heat converts the fumes to a toxic, irritating gas.
- **Use Gloves** — Use gloves that trichlorotrifluoroethane can't penetrate. Because the solvent dissolves the natural oils, avoid long or repeated contact with your skin.
- **Wash** — Wash hands immediately after using.
- **Do Not Take Internally** — Do not drink. If taken internally, see a doctor immediately.

HEAVY EQUIPMENT

This equipment weighs over 35 pounds and can cause serious injury if lifted or carried alone. Observe the following safety precaution:

- **Do Not Lift or Carry Alone** — Do not attempt to lift, carry, or move the equipment by yourself — get help.

LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES, DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

DATES OF ISSUE for original and changed pages are:

Original..0...3 August 1984

TOTAL NUMBER OF PAGES in this publication is 124, consisting of the following:

Page No.	Change No.*
A - B	0
i - iii	0
iv Blank	0
1-1 - 1-25	0
1-26 Blank	0
2-1 - 2-26	0
3-1	0
3-2 Blank	0
4-1 - 4-27	0
4-28 Blank	0
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B-1 - B-9	0
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C-1 - C-3	0
C-4 Blank	0
D-1	0
D-2 Blank	0
E-1 - E-2	0
GLOSSARY-1 - GLOSSARY-2	0
INDEX-1 - INDEX-5	0
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*Zero in this column indicates an original page.

TM 11-5805-705-12
EE163-EC-OMI-010/E154 MD1026
TO 31W2-2G-321
TM 08761-12/1

Technical Manual
No. 11-5805-705-12
Technical Manual
EE163-EC-OMI-010/E154 MD1026
Technical Order
No. 31W2-2G-321
Technical Manual
No. 08761A-12/1

DEPARTMENTS OF THE ARMY,
THE NAVY, AND
THE AIR FORCE
AND THE MARINE CORPS

Washington, DC, 17 September 1984

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
MULTIPLEXER MD-1026(P)/G
(NSN 5820-01-145-4945)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007.

For Air Force, submit AFTO Form 22 (Technical Order System Publication Improvement Report and Reply) in accordance with paragraph 6-5, Section VI, TO 00-5-1. Forward direct to prime ALC/MST.

For Navy, mail comments to the Commander, Naval Electronics System Command, ATTN: ELEX 8122, Washington, DC 20360.

Marine Corps Units should submit NAVMC10772.

In any case, a reply will be furnished direct to you.

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HOW TO USE THIS MANUAL

This manual tells you how to operate and maintain Digital Data Modem MD-1026(P)/G.

Step-by-step procedures with illustrations give you all the necessary information to install, operate, and maintain this equipment at an organizational level. However, do not attempt any procedure before you first familiarize yourself with the entire procedure.

If you are looking for general information, use the table of contents in the front of this book to locate chapters and sections containing this information.

If you are looking for specific information, use the subject index in front of each chapter to locate the paragraph and page where the topic is discussed.

CHAPTER 1
INTRODUCTION

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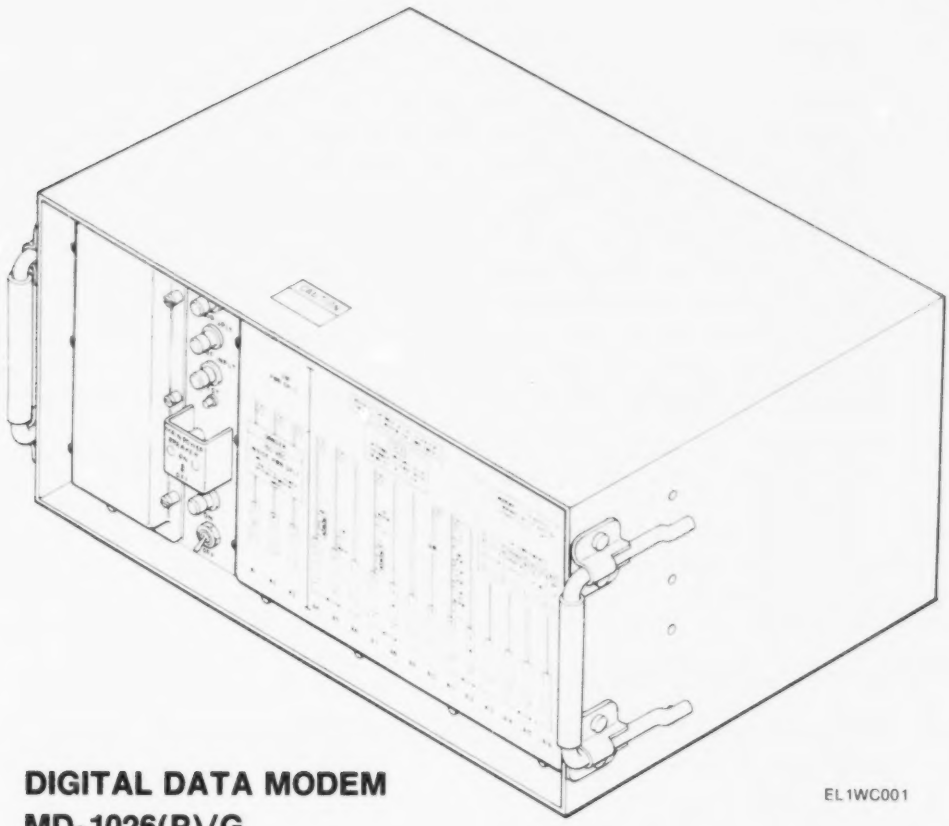
Section I. GENERAL INFORMATION



DIGITAL DATA MODEM MD-1026(P)/G

EL1WC001

1-1. SCOPE

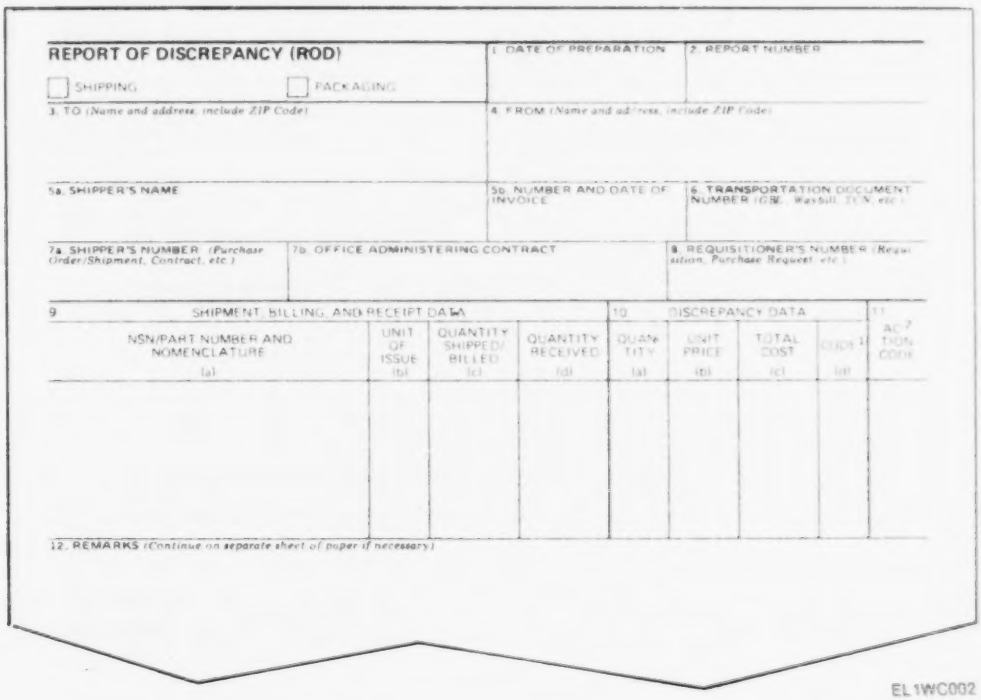
This manual provides general description, operation, and operator and/or organizational maintenance instructions for Digital Data Modem MD-1026(P)/G. Digital Data Modem MD-1026(P)/G is referred to in this manual as the GM (Group Modem).

1-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update. Air Force personnel will use AFR 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting. Navy personnel will report maintenance performed using the Maintenance Data Collection Subsystem (MDCS) in accordance with OPNAVINST 4790.2, Volume 3, and unsatisfactory material conditions (UR submissions) in accordance with OPNAVINST 4790.2, Volume 2, Chapter 17.



REPORT OF DISCREPANCY (ROD)

☐ SHIPPING ☐ PACKAGING

1. DATE OF PREPARATION | 2. REPORT NUMBER

3. TO (Name and address, include ZIP Code) | 4. FROM (Name and address, include ZIP Code)

5a. SHIPPER'S NAME | 5b. NUMBER AND DATE OF INVOICE | 6. TRANSPORTATION DOCUMENT NUMBER (GBL, Waybill, TCN, etc.)

7a. SHIPPER'S NUMBER (Purchase Order/Shipment, Contract, etc.) | 7b. OFFICE ADMINISTERING CONTRACT | 8. REQUISITIONER'S NUMBER (Requisition, Purchase Request, etc.)

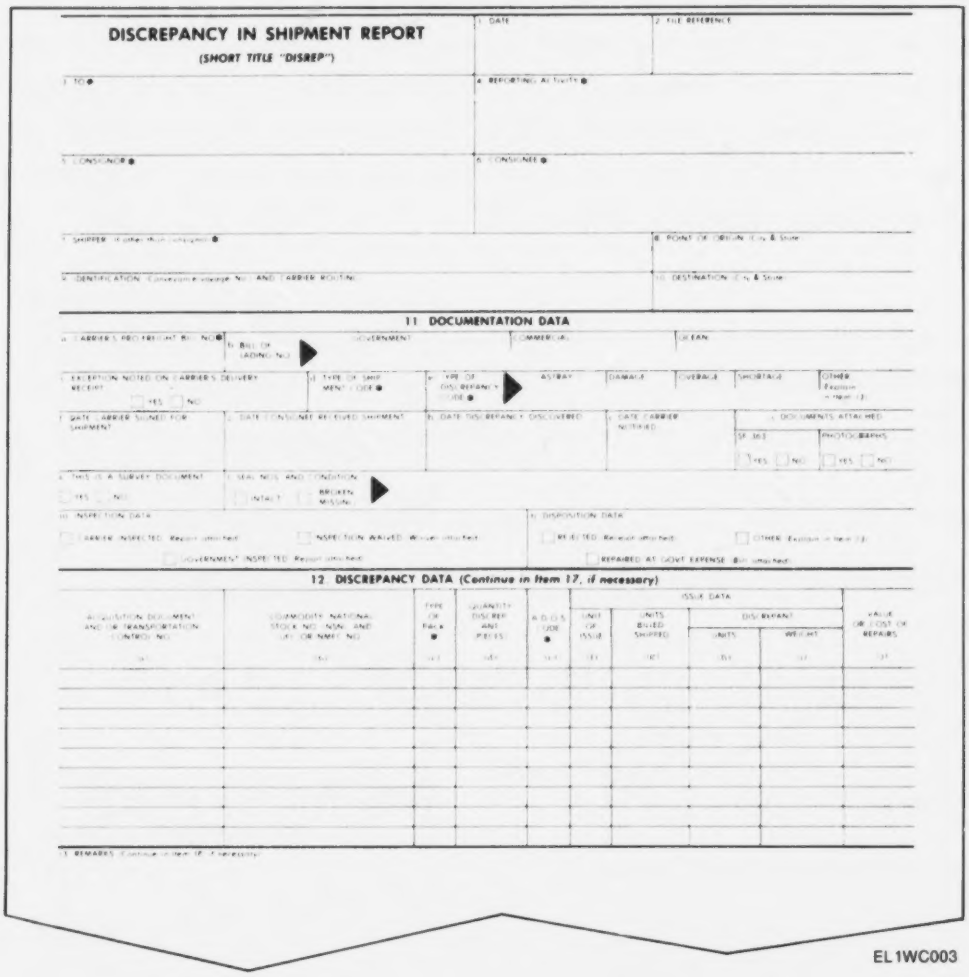
9 SHIPMENT, BILLING, AND RECEIPT DATA				10 DISCREPANCY DATA				11
NSN/PART NUMBER AND NOMENCLATURE (a)	UNIT OF ISSUE (b)	QUANTITY SHIPPED/ BILLED (c)	QUANTITY RECEIVED (d)	QUANTITY (e)	UNIT PRICE (f)	TOTAL COST (g)	CODE (h)	ACTION CODE

12. REMARKS (Continue on separate sheet of paper if necessary)

EL1WC002

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140 55/ NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS—Continued



DISCREPANCY IN SHIPMENT REPORT
(SHORT TITLE "DISREP")

1. DATE
2. YOUR REFERENCE
3. TO
4. REPORTING ACTIVITY
5. CONSIGNOR
6. CONSIGNEE
7. SHIPPER
8. POINT OF ORIGIN (City & State)
9. IDENTIFICATION (Consignment Voyage No.) AND CARRIER ROUTING
10. DESTINATION (City & State)

11. DOCUMENTATION DATA

a. CARRIER'S PRO FREIGHT BILL NO.
b. BILL OF LADING NO.
GOVERNMENT
COMMERCIAL
OCEAN
c. EXCEPTION NOTED ON CARRIER'S DELIVERY RECEIPT
YES NO
d. TYPE OF SHIPMENT CODE
e. TYPE OF DISCREPANCY CODE
ASTRAY
DAMAGE
OVERAGE
SHORTAGE
OTHER (Explain in Item 17)
f. DATE CARRIER SIGNED FOR SHIPMENT
g. DATE CONSIGNEE RECEIVED SHIPMENT
h. DATE DISCREPANCY DISCOVERED
i. DATE CARRIER NOTIFIED
j. DOCUMENTS ATTACHED
SF 361
PHOTOGRAPHS
YES NO
YES NO
k. THIS IS A SURVEY DOCUMENT
YES NO
l. SEAL NOS. AND CONDITION
INTACT
BROKEN/MISSING
m. INSPECTION DATA
CARRIER INSPECTED. Report attached
INSPECTION WAIVED. Reason stated
GOVERNMENT INSPECTED. Report attached
n. DISPOSITION DATA
REJECTED. Reason attached
OTHER (Explain in Item 17)
REPAIRED AT GOVT EXPENSE. Bill attached

12. DISCREPANCY DATA (Continue in Item 17, if necessary)

ACQUISITION DOCUMENT AND/OR TRANSPORTATION CONTROL NO.	COMMODITY, NATIONAL STOCK NO., NSN, AND/OR PART NO.	TYPE OF PACK	QUANTITY DISCREP AND PIECES	A.D.D.S. CODE	ISSUE DATA: UNIT OF ISSUE	ISSUE DATA: UNITS BILLED/SHIPPED	DISCREPANT: UNITS	DISCREPANT: WEIGHT	VALUE OR COST OF REPAIRS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)

13. REMARKS (Continue in Item 17, if necessary)

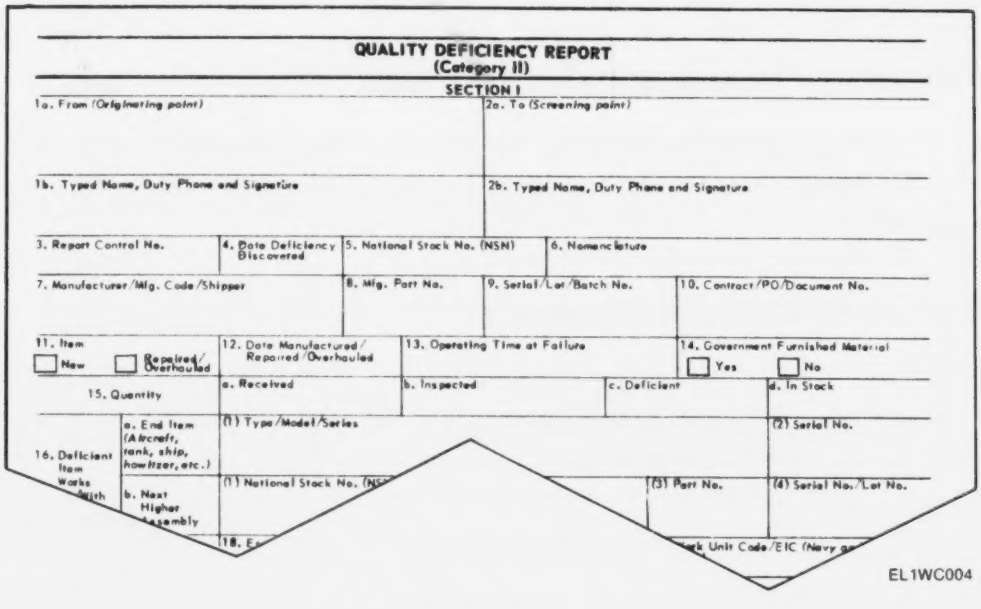
EL1WC003

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-4. HAND RECEIPT (HR) MANUAL

There is no Hand Receipt Manual required for this equipment.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)



QUALITY DEFICIENCY REPORT
(Category II)

SECTION I

1a. From (Originating point)

2a. To (Screening point)

1b. Typed Name, Duty Phone and Signature

2b. Typed Name, Duty Phone and Signature

3. Report Control No.

4. Date Deficiency Discovered

5. National Stock No. (NSN)

6. Nomenclature

7. Manufacturer/Mfg. Code/Shipper

8. Mfg. Part No.

9. Serial/Lot/Batch No.

10. Contract/PO/Document No.

11. Item ☐ New ☐ Repaired/Overhauled

12. Date Manufactured/Repaired/Overhauled

13. Operating Time at Failure

14. Government Furnished Material ☐ Yes ☐ No

15. Quantity

a. Received

b. Inspected

c. Deficient

d. In Stock

16. Deficient Item Works With

a. End Item (Aircraft, tank, ship, howitzer, etc.)

(1) Type/Model/Series

(2) Serial No.

b. Next Higher Assembly

(1) National Stock No. (NSN)

(3) Part No.

(4) Serial No./Lot No.

18. E...

...k Unit Code/EIC (Navy ...

EL1WC004

a. Army. If your Digital Data Modem MD-1026(P)/G needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

b. Air Force. Air Force personnel are encouraged to submit EIRs in accordance with AFR 900-4.

c. Navy. Navy personnel are encouraged to submit EIRs through their local Beneficial Suggestion Program.

d. Marine Corps. Marine Corps Units shall submit NAVMC10772.

1-6. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness.

1-7. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2, Procedures for Destruction of Electronic Materiel to Prevent Enemy Use.

1-8. NOMENCLATURE CROSS-REFERENCE LIST

The following list will help you locate the official nomenclature of the major assemblies in the GM. Official nomenclature must be used when completing report forms or when using technical manuals.

Common Name	Official Nomenclature	Reference Designation
AC INPUT	Ac Input Circuit Card Assembly	A1
BITE 1	BITE 1 Circuit Card Assembly	A10
BPLR	Bipolar Circuit Card Assembly	A4,A7,A11,A14*
CAOW	Cable Orderwire Circuit Card Assembly	A5,A8,A12,A15**
DPHS A	Conditioned Diphase A Circuit Card Assembly	A4,A7,A11,A14*
DPHS B	Conditioned Diphase B Circuit Card Assembly	A5,A8,A12,A15**
DPLS	Dipulse Circuit Card Assembly	A4,A7,A11,A14*
MULTI VDC	Multi Vdc Circuit Card Assembly	A2
5 VDC	5 Vdc Circuit Card Assembly	A3

*The GM can be configured with any combination of diphase A or dipulse or bipolar CCAs in slots A4, A7, A11,or A14.

**Cable orderwire or diphase B CCAs can go in slots A5, A8, or A12, A15 depending on the following.

- If a diphase A is in slots A4, A7, A11 or A14 then a diphase B must be in the next slot: A5, A8, A12 or A15.
- If a bipolar or dipulse is in slots A4, A7, A11 or A14 then a cable orderwire must be in the next slot: A5, A8, A12 or A15.

1-9. LIST OF ABBREVIATIONS

Abbreviations are spelled out the first time they appear in text. However, a complete list of all abbreviations used in this manual is given below as an additional aid to knowing their full meaning. Acronyms also are included.

Abbreviation/Acronym	Definition
ASI	Alarm Status Indicator
AVOW	Analog Voice Orderwire
BITE	Built-in Test Equipment
BPLR	Bipolar
CAOW	Cable Orderwire
CCA	Circuit Card Assembly
CNCE	Communication Nodal Control Element
DGM	Digital Group Multiplexing
DISREP	Discrepancy in Shipment Report
DOW	Data Orderwire
DPHS	Diphase
DPLS	Dipulse
DVOW	Digital Voice Orderwire
EIR	Equipment Improvement Recommendation
FSCM	Federal Supply Code for Manufacturers
GM	Group Modem (Modem, Digital Data MD-1026(P)/G)
GND	Ground
HR	Hand Receipt
kb/s	Thousand Bits per Second
LED	Light Emitting Diode
LGM	Loop Group Multiplexer (Multiplexer TD-1235(P)/TTC)

1-9. LIST OF ABBREVIATIONS—Continued

Abbreviation/Acronym	Definition
LOI	Loss of Input
MAC	Maintenance Allocation Chart
MDCS	Maintenance Data Collection Subsystem
MGM	Master Group Multiplexer (Multiplexer TD-1237(P)/G)
MTOE	Modified Table of Organization and Equipment
MWO	Modification Work Orders
NRZ	Nonreturn to Zero
PMCS	Preventive Maintenance Checks and Services
RM	Radio Modem (Modem, Digital Data MD-1065/G)
RPSTL	Repair Parts and Special Tools List
ROA	Remote Optical Assembly
ROD	Report of Discrepancy
SRWBR	Short Range Wide Band Radio
TGM	Trunk Group Multiplexer (Multiplexer TD-1236/G)
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TO	Technical Order
TRF	Traffic
XMT	Transmit

Section II. EQUIPMENT DESCRIPTION

1-10. PURPOSE

The GM is a digital data modem used in the Digital Group Multiplexer (DGM) to provide interface functions. Interfacing is provided for these basic types of modulation (diphase, dipulse, and bipolar) and can process analog voice orderwire, digital voice orderwire, and data orderwire.

1-11. EQUIPMENT CHARACTERISTICS, CAPABILITIES, FEATURES, AND USES

a. Characteristics.

- Shelter and rack mounted
- Powered from standard 115 Vac line
- Interfaces with many different DGM equipments

b. Capabilities.

- Conditioned diphase operation
- Dipulse operation
- Bipolar operation

c. Features.

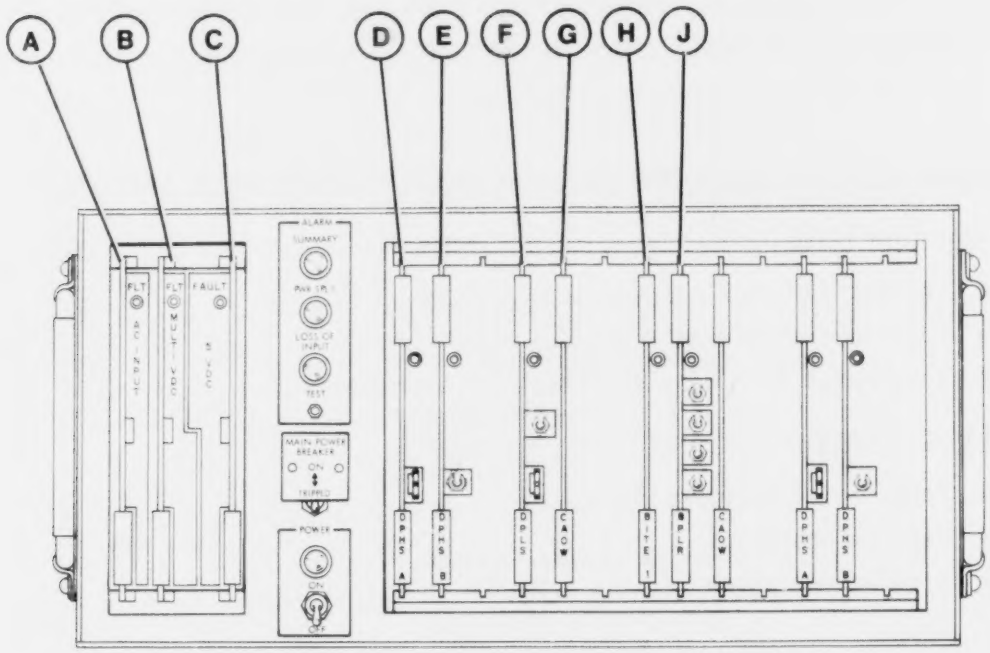
- Simple operation
- Built-in test equipment
- Rapid access to assemblies for ease of repair

d. Used With.

- AN/TRC-173
- AN/TRC-174
- AN/TRC-175
- AN/TRC-138 MOD
- AN/TRC-170V1
- AN/TRC-170V2
- AN/TRC-170V3
- AN/TSQ-111 Type I
- AN/TSQ-111 Type III
- AN/TTC-42

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

All major components of the GM are in a metal case which may be rack mounted.



NOTE

Reference designators are shown on GM cover.

Key	Name	Reference Designation	Function
(A)	AC INPUT CCA	A1	Provides rectified ac, sums system faults, drives indicator lamps, and initiates nuclear shutdown.
(B)	MULTI VDC CCA	A2	Provides -5, +12 and -12 Vdc.
(C)	5 VDC CCA	A3	Provides +5 Vdc.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS—Continued

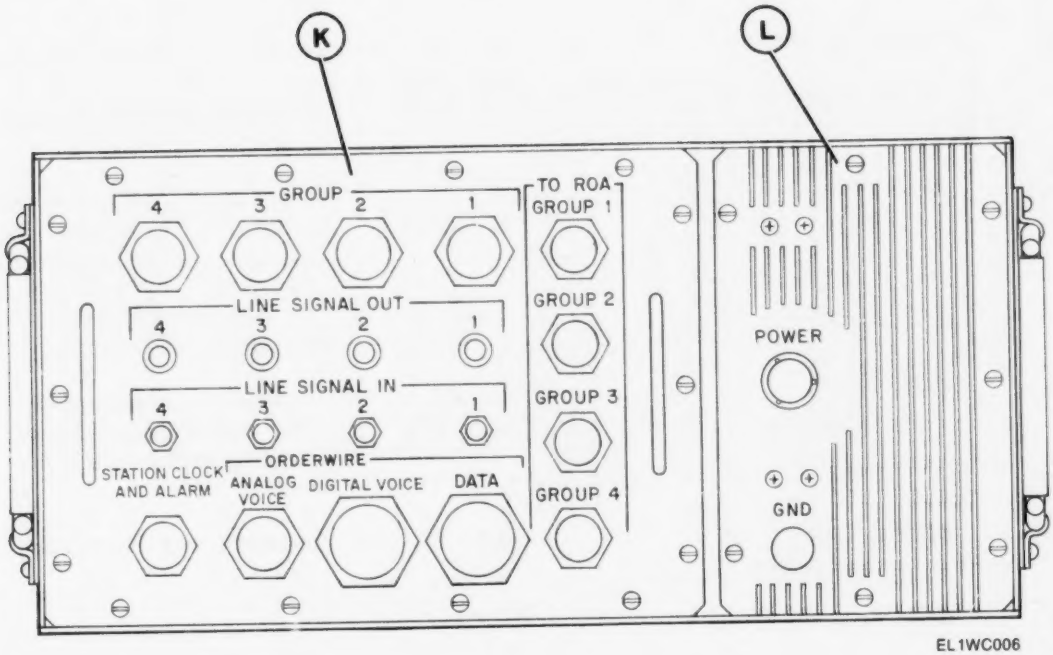
Key	Name	Reference Designation	Function
(D)	DPHS A CCA*	A4, A7 A11, A14	Used with conditioned diphase B CCA, provides conversion of balanced NRZ data to conditioned diphase data, and conversion of conditioned diphase data back to balanced NRZ data.
(E)	DPHS B CCA**	A5, A8 A12, A15	Used with diphase A CCA, processes analog or digital orderwire over cable.
(F)	DPLS CCA*	A4, A7 A11, A14	Used with cable orderwire CCA, provides conversion of balanced NRZ data to dipulse data and of dipulse data to balanced NRZ data.
(G)	CAOW CCA**	A5, A8 A12, A15	Used with bipolar or diphase CCA, processes analog orderwire over cable.
(H)	BITE 1 CCA*	A10	Detects and indicates faults in GM.
(J)	BPLR CCA	A4, A7 A11, A14	Used with cable orderwire CCA, provides conversion of balanced NRZ data to bipolar data, and of bipolar data to balanced NRZ data.

*The GM can be configured with any combination of diphase A or dipulse or bipolar CCAs in slots A4, A7, A11, or A14.

**Cable orderwire or diphase B CCAs can go in slots A5, A8, A12 or A15 depending on the following.

- If a diphase A is in slots A4, A7, A11 or A14 then a diphase B must be in the next slot A5, A8, A12 or A15.
- If a bipolar or dipulse is in slots A4, A7, A11 or A14 then a cable orderwire must be in the next slot A5, A8, A12 or A15.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS—Continued

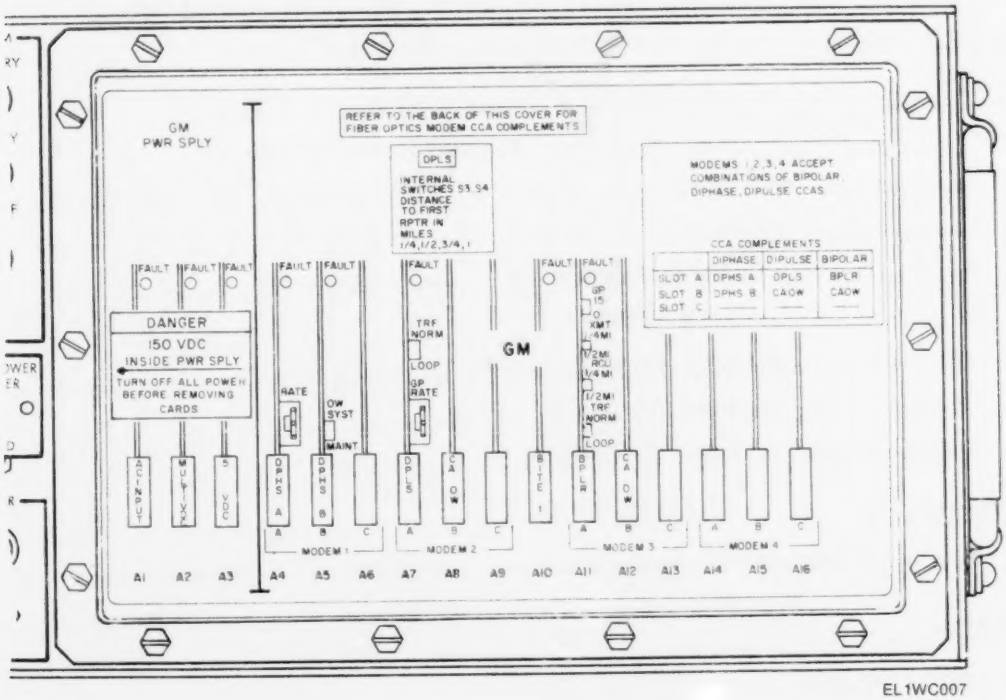


1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS—Continued

Key	Name	Function
(K)	Connector Assembly	Interfaces GM with other equipment.
(L)	Connector Assembly	Connects GM to 115 Vac.

1-13. EQUIPMENT CONFIGURATIONS

The GM can provide DIPHASE, DIPULSE or BIPOLAR modulation. It contains four circuits (modems), each of which can be configured to process DPHS, DPLS or BPLR, depending on the complement of CCAs selected and installed in the slots. Slot A10 is reserved for the BITE 1 CCA.



EL1WC007

Slots A6, A9, A13 and A16 are used only in fiber optic systems.

1-14. APPLICATIONS

The GM is installed in shelters or vans. It interfaces with other DGM and non-DGM units in a number of interconnection arrangements. These arrangements are those required by the communications system in which it operates. The GM may interface with, but is not necessarily limited to, the following equipment:

a. Equipment Side.

- Radio Terminal Set AN/TRC-170( )(V)
- Short Range Wide Band Radio (SRWBR)
- Digital Data Modem MD-1065(P)/G (RM)
- Multiplexer TD-1235(P)/TTC (LGM)
- Multiplexer TD-1236/G (TGM)
- Multiplexer TD-1237(P)/G (MGM)

b. Line Side. The following units connect to MD-1026(P)/G by way of Cable Special Purpose, Electrical CX-11230/G:

- Communication Nodal Control Element AN/TSQ-111 (CNCE)
- Central Office, Communication, Automatic AN/TCC-39
- Multiplexer TD-754/G
- Multiplexer TD-976/G
- Modem, Digital Data MD-1026(P)/G
- Multiplexer TD-1233(P)/TTC
- Multiplexer Combiner TD-1234(P)/TTC
- Restorer, Pulse Form TD-982/G
- Restorer, Pulse Form TD-206/G

c. Orderwires.

- OCU I or OCU II

d. Alarm.

- OCU I or OCU II
- Alarm Status Indicator (ASI)

1-14. APPLICATIONS—Continued

e. Station Clock Interface.

- Station Clock Generating Unit

1-15. PERFORMANCE DATA

a. Conditioned Diphase Group Modem Equipment Side.

- Group Data Out
  - Waveform - NRZ, balanced
  - Signal rate - 72 Kb/s to 4608 kb/s
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.
- Group Timing Out
  - Waveform - Squarewave, balanced
  - Timing rate - 72 kHz to 4608 kHz
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.
- Group Data In
  - Waveform - NRZ, balanced
  - Signal rate - 72 kb/s to 4608 kb/s
  - Amplitude - +50 mV min for digital 1; -50 mV min for digital 0.
- Group Timing In
  - Waveform - Squarewave, balanced
  - Timing rate - 72 kHz to 4608 kHz
  - Amplitude - +50 mV min for digital 1; -50 mV min for digital 0.
- Black Station Clock Out
  - Waveform - Squarewave, balanced
  - Bandwidth - 72 kHz to 4608 kHz
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.

1-15. PERFORMANCE DATA—Continued

- Analog Voice Orderwire (AVOW) Transmit
  - Waveform - Analog, balanced
  - Bandwidth - 300 Hz to 3400 Hz
  - Amplitude - -4 dBm
- Analog Voice Orderwire (AVOW) Receive
  - Waveform - Analog, balanced
  - Bandwidth - 300 Hz to 3400 Hz
  - Amplitude - -7 to -2 dBm
- Digital Voice Orderwire (DVOW) In
  - Waveform - NRZ, balanced
  - Signal rate - 16 kb/s
  - Amplitude - +50 mV min for digital 1; -50 mV min for digital 0.
- Data Orderwire (DOW) In
  - Waveform - NRZ, balanced
  - Signal rate - 2 kb/s
  - Amplitude - +50 mV for digital 1; - 50 mV min for for digital 0.
- Data Orderwire (DOW) Out
  - Waveform - NRZ, balanced
  - Signal rate - 2 kb/s
  - Amplitude - +500 mV min for digital 1; -500 mV min for digital 0 ±3 volts max into open circuit.
- Data Orderwire (DOW) Timing Out
  - Waveform - Squarewave, balanced
  - Frequency - 2 kHz
  - Amplitude - +500 mV min for digital 1; -500 mV min for digital 0 ±3 volts max into open circuit.
- Digital Voice Orderwire (DVOW) Out
  - Waveform - Squarewave, balanced
  - Signal rate - 16 kb/s
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.

1-15. PERFORMANCE DATA—Continued

b. Conditioned Diphase Group Modem Line Side Group.

- Transmit Data
  - Waveform - Diphase, unbalanced
  - Signal rate - 72 kb/s to 4608 kb/s
  - Amplitude - 3 volts p-p
- Analog Voice Orderwire (AVOW) Transmit
  - Waveform - Analog, unbalanced
  - Bandwidth - 300 Hz to 3400 Hz
  - Amplitude - +5 dBm
- Combined Data Orderwire (DOW) Out
  - Waveform - NRZ, unbalanced
  - Signal rate - 32 kb/s
  - Amplitude - +0.5 volts min for digital 1; -0.5 volts min for digital 0.

c. Dipulse Group Modem Equipment Side.

- Group Data Out
  - Waveform - NRZ, balanced
  - Signal rate - 288 kb/s to 2304 kb/s
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.
- Group Timing Out
  - Waveform - Squarewave, balanced
  - Frequency - 288 kHz to 2304 kHz
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.
- Group Data In
  - Waveform - NRZ, balanced
  - Signal rate - 288 kb/s to 2304 kb/s
  - Amplitude - +50 mV min for digital 1; -50 mV min for digital 0.

1-15. PERFORMANCE DATA—Continued

- Group Timing In - Waveform - Squarewave, balanced
  - Frequency - 288 kHz to 2304 kHz
  - Amplitude - +50 mV min for digital 1; -50 mV min for digital 0.
- Black Station Clock Out - Waveform - Squarewave, balanced
  - Frequency - 288 kHz to 2304 kHz
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.
- Analog Voice Orderwire (AVOW) Transmit - Waveform - Analog, balanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - -4 dBm
- Analog Voice Orderwire (AVOW) Receive - Waveform - Analog, balanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - -7 to -2 dBm

d. Dipulse Group Modem Line Side.

- Transmit Data - Waveform - Dipulse, unbalanced
  - Signal rate - 2304 kb/s
  - Amplitude - 1.6 volts to 2.0 volts base to peak
- Analog Voice Orderwire (AVOW) In - Waveform - Analog, unbalanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - 0.9 to 9 volts
- Analog Voice Orderwire (AVOW) Out - Waveform - Analog, unbalanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - 2.75 volts

1-15. PERFORMANCE DATA—Continued

e. Bipolar Group Modem Equipment Side.

- Group Data Out
  - Waveform - NRZ, balanced
  - Signal rate - 4.9152 Mb/s
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV min for digital 0.
- Group Timing Out
  - Waveform - Squarewave, balanced
  - Frequency - 4.9152 MHz
  - Amplitude - +4 volts max to +100 mV min for digital 1; -4 volts max to -100 mV for digital 0.
- Group Data In
  - Waveform - NRZ, balanced
  - Signal rate - 4.9152 Mb/s
  - Amplitude - +50 mV min for digital 1; - 50 mV min for digital 0.
- Group Timing In
  - Waveform - Squarewave, balanced
  - Frequency - 4.9152 MHz
  - Amplitude - +50 mV min for digital 1; -50 mV min for digital 0.
- Analog Voice Orderwire (AVOW) Transmit
  - Waveform - Analog, balanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - -4 dBm
- Analog Voice Orderwire (AVOW) Receive
  - Waveform - Analog, balanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - -7 to -2 dBm

1-15. PERFORMANCE DATA—Continued

f. Bipolar Group Modem Line Side.

- Transmit Data - Waveform - Bipolar, unbalanced
  - Signal rate - 4.9152 Mb/s
  - Amplitude - 0.9 volts
- Analog Voice Orderwire (AVOW) In - Waveform - Analog, unbalanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - -4 dBm
- Analog Voice Orderwire (AVOW) Out - Waveform - Analog, unbalanced
  - Bandwidth - 300 Hz to 1700 Hz
  - Amplitude - -7 to -2 dBm

g. Prime Power.

- Ac/Input - 104 volts to 126 volts (ac), 47 Hz to 420 Hz, 90 watts.

h. Alarms.

- S - Summary Fault; contact closure and lamp. Indicates any detected fault.
- SA - Internal Fault; contact closure.
- LS - Loss of incoming signal on CX-11230/G cable; contact closure.

i. Environmental Characteristics.

(1) Temperature

- Operating - -25°F to +145°F (-32°C to +63°C)
- Storage - -70°F to +160°F (-57°C to +71°C)

(2) Humidity

- Operating and Storage - Tropical levels

(3) Altitude

- Operating - 10,000 feet maximum
- Air Transportation - 40,000 feet maximum

1-15. PERFORMANCE DATA—Continued

j. Physical Characteristics.

(1) Dimensions

- Height - 8.5 inches
- Depth - 12 inches
- Width - 19 inches

(2) Weight - 35 pounds

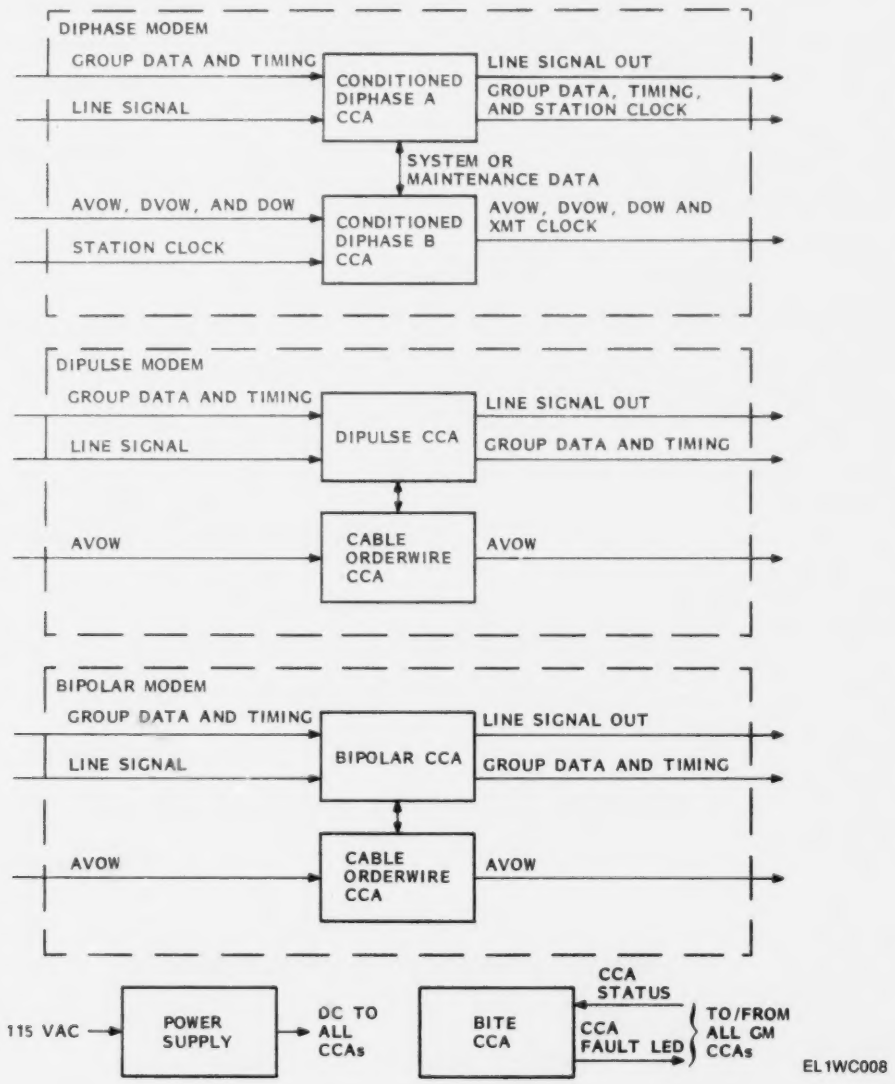
(3) Type of Mounting - 19-inch rack

Section III. PRINCIPLES OF OPERATION

1-16. GM FUNCTIONAL DESCRIPTION

The GM provides interface conversion of group signals. After conversion, the line signals are applied to coaxial transmission cables. The group data and orderwire signals are balanced NRZ signals, that are converted to the following forms:

- Conditioned Diphase
- Dipulse
- Bipolar



1-16. GM FUNCTIONAL DESCRIPTION—Continued

Up to four separate NRZ balanced digital group signals are independently processed and converted to conditioned diphase, dipulse, or bipolar form and fed out of the GM via cable.

In the opposite direction unbalanced diphase, dipulse or bipolar line signals are received from the cable. These signals are processed and converted to balanced NRZ digital group signals. The GM also interfaces digital voice orderwire (DVOW) and analog voice orderwire (AVOW) with the cable.

a. Conditioned Diphase. The conditioned diphase modem uses the diphase A and B CCAs. These CCAs accept and process the following balanced NRZ signals and generate conditioned diphase and orderwire signals for cable transmission:

- Group Data and Timing
- Analog Voice Orderwire (AVOW)
- Digital Voice Orderwire (DVOW)
- Data Orderwire (DOW)
- Station Clock (32 kHz)

A balanced XMT clock (2 kHz) is obtained from the station clock. In the other direction, the received cable signal is processed to regenerate all of the above balanced signals. Also generated are DVOW timing, DOW timing and black station clock.

b. Dipulse. The dipulse modem uses the dipulse and cable OW CCAs. These CCAs accept and process the following balanced signals to generate dipulse and orderwire signals for cable transmission:

- Group Data and Timing
- Analog Voice Orderwire

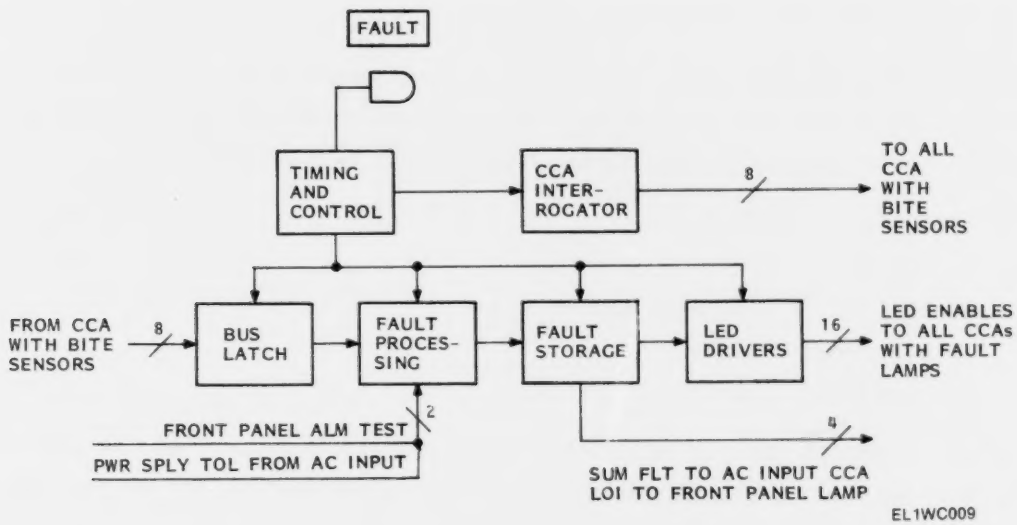
In the other direction, the received cable signal is processed to regenerate all the above signals plus black station clock.

c. Bipolar. The bipolar modem uses the bipolar and cable OW CCAs. These CCAs accept and process the following balanced signals to generate bipolar and orderwire signals for cable transmission:

1-16. GM FUNCTIONAL DESCRIPTION—Continued

- Group Data and Timing
- Analog Voice Orderwire

In the other direction, the received cable signal is processed to regenerate the above signals.

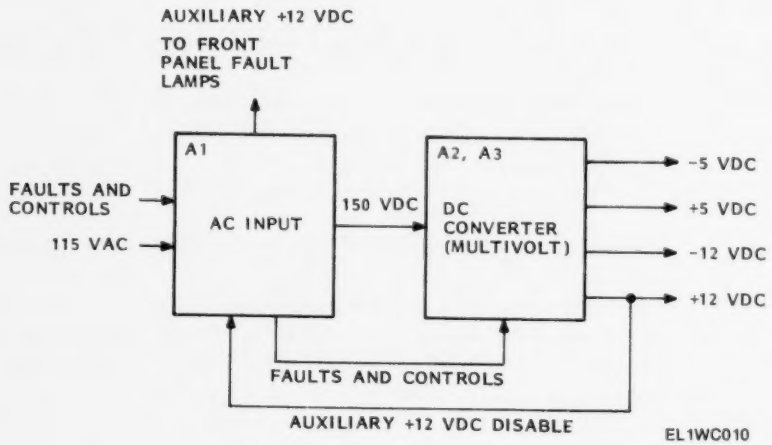


d. BITE Circuits. The timing and control section within the BITE CCA provides the timing signals that control the operation of the entire BITE circuit. Under the control of timing signals, the interrogator addresses each BITE sensor (maximum of 16 addresses on eight lines) in succession and the sensors reply with their status. The BITE-sensored CCAs reply when addressed and the replies (on eight lines) are latched by the bus latch. When strobed by the timing and control circuit, the replies are evaluated by logic in the fault processing circuits. The fault processing circuits also receive the front panel alarm test signal and the PWR SPLY TOL signal from the ac input CCA. After evaluation by the fault processing circuits, the fault signals are stored by the fault storage circuits. If a fault is present during two successive scans, the fault storage circuits send the decoded fault signal to the LED drivers. From there, the signal lights up the proper fault lamp. From the fault storage circuits, four other fault signals are also outputted:

1-16. GM FUNCTIONAL DESCRIPTION—Continued

- Fault Summary (SUM FLT) to the ac input CCA indicates that a fault is present at one of the CCAs.
- Loss of Input (LOI) to the front panel indicates that a data carrying CCA has lost its data input from equipment side.
- LS indicates unit has lost input from line side.

Problems in the timing and control circuits light up the fault lamp on the BITE 1 CCA. Pressing the front panel ALARM TEST switch lights up all fault lamps on the GM.



e. Power Supply. The GM power supply provides all the operating voltages needed by the GM. An ac input of 115 volts feeds the ac input section of the power supply. The ac is converted to an auxiliary +12 Vdc circuit to light the front panel lamps until power is received from the dc converter +12 Vdc circuits. When the converter +12 Vdc power supply is on, the auxiliary +12 Vdc circuit is disabled. The ac input circuits provide +150 Vdc to the converter, where it is converted to -5, +5, -12 and +12 Vdc for use in the GM. GM fault signals and control signals control the operation of the ac input circuits and shut down the power supply if needed. Faults and control signals are also provided to the converter from the ac input circuits.

CHAPTER 2
OPERATING INSTRUCTIONS

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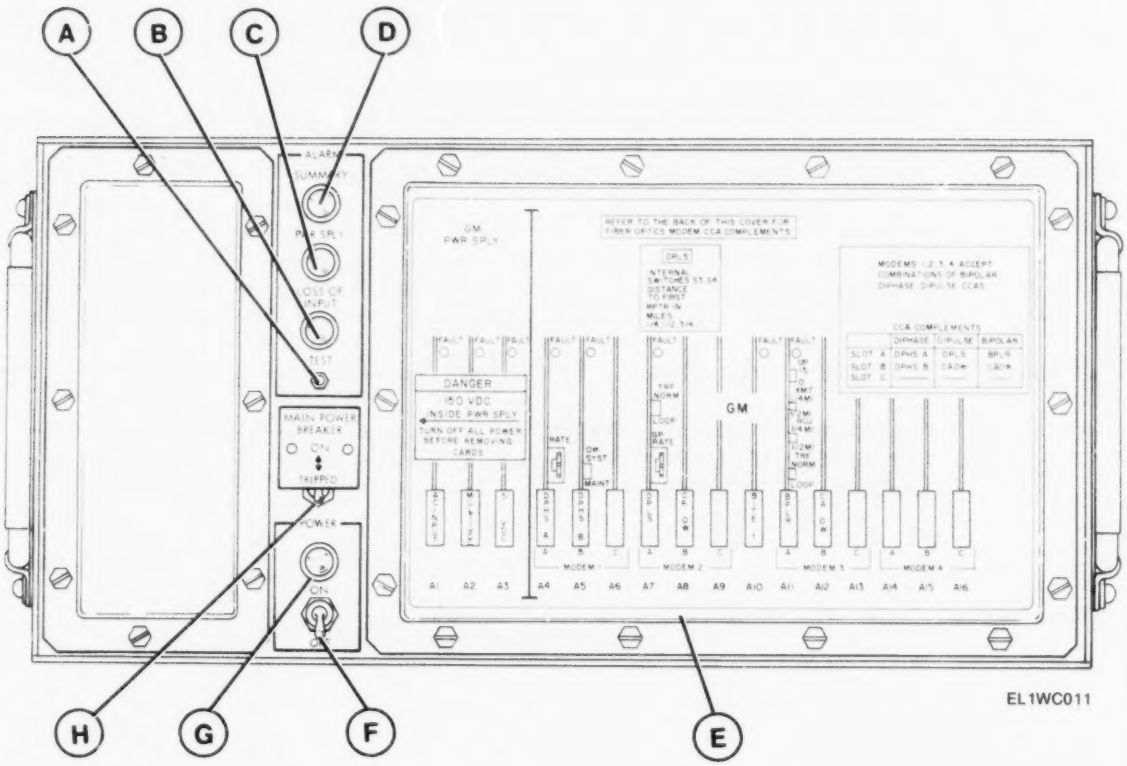
Section I. DESCRIPTION AND USE OF OPERATORS CONTROLS AND INDICATORS

2-1. FRONT PANEL CONTROLS AND INDICATORS

All GM operator controls and indicators are located on the front panel. All other controls and indicators are located on the CCAs and are for maintenance and setup.

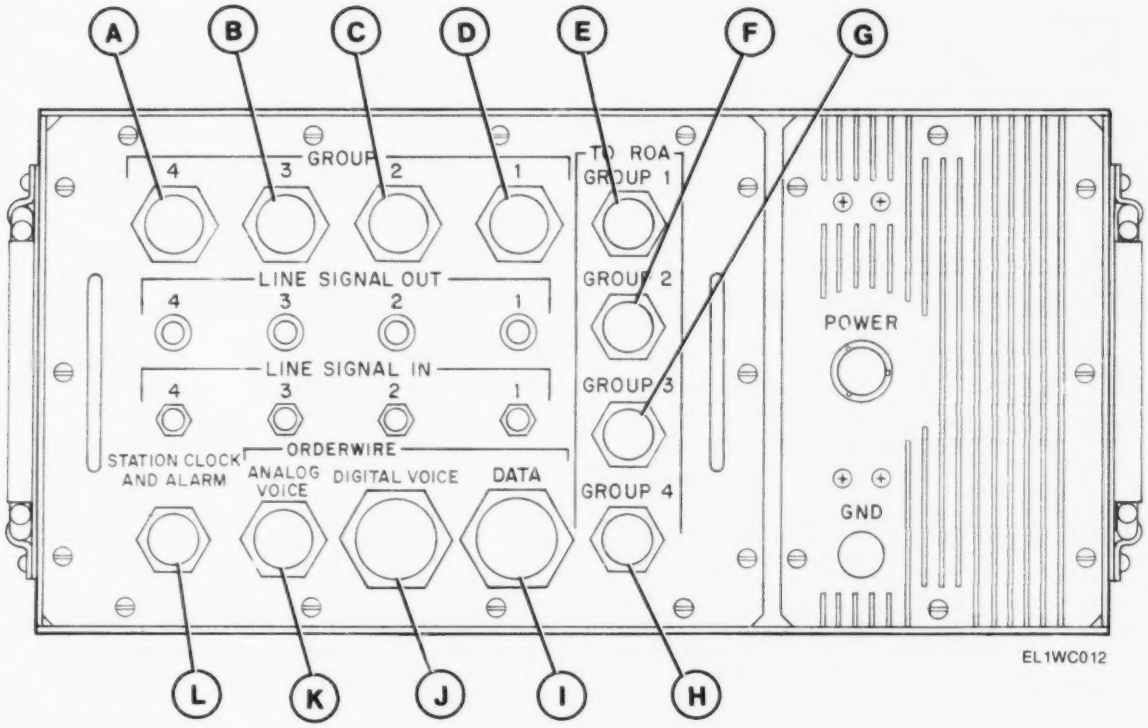


A label on the front panel shows the locations of all CCAs and CCA mounted controls and indicators. The label is a handy reference for use during maintenance and system setup. Switch settings may be marked on the label with a grease pencil.

2-1. FRONT PANEL CONTROLS AND INDICATORS—Continued

Key	Name	Type	Function
(A)	ALARM TEST	Pushbutton	Energizes the BITE circuits in a test mode to light all fault lamps on the GM or fault LEDs on A4 through A16.
(B)	ALARM LOSS OF INPUT	Lamp	Lights if the GM loses an external input. The appropriate CCA fault lamp also lights.
(C)	ALARM PWR SPLY	Lamp	Lights if one or more power supply output voltage is out of tolerance.
(D)	ALARM SUMMARY	Lamp	Lights if any fault is detected by the GM.
(E)	LABEL	Label	Identifies internal controls and indicators.
(F)	POWER ON/OFF	Toggle Switch	Switches 115 Vac to power supply ON or OFF.
(G)	POWER	Lamp	Lights when power to power supply circuits is ON.
(H)	MAIN POWER BREAKER	Circuit Breaker	Trips when an overload exists in the GM. Can be reset by throwing circuit breaker to ON position.

2-2. REAR PANEL CONNECTORS

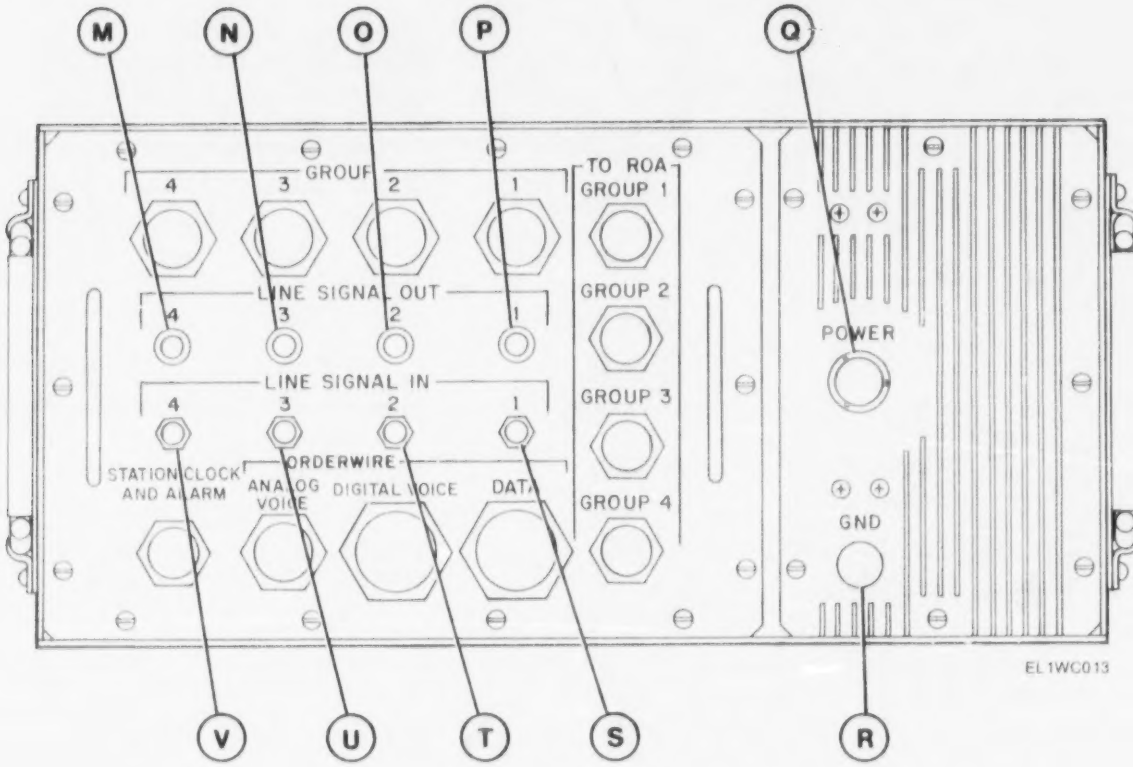


Key	Name	Type	Function
A	GROUP 4	Multipin Connector	Input/output connector for group 4.
B	GROUP 3	Multipin Connector	Input/output connector for group 3.
C	GROUP 2	Multipin Connector	Input/output connector for group 2.
D	GROUP 1	Multipin Connector	Input/output connector for group 1.

2-2. REAR PANEL CONNECTORS—Continued

Key	Name	Type	Function
(E)	TO RGA GROUP 1	Multipin Connector	Not used at present. Input/output connector for remote optical assembly (ROA), groups 1, 2, 3, and 4, when implemented.
(F)	TO ROA GROUP 2	Multipin Connector	
(G)	TO ROA GROUP 3	Multipin Connector	
(H)	TO ROA GROUP 4	Multipin Connector	
(I)	ORDERWIRE DATA	Multipin Connector	Input/output connector for data orderwire.
(J)	ORDERWIRE DIGITAL VOICE	Multipin Connector	Input/output connector for digital voice orderwire.
(K)	ORDERWIRE ANALOG VOICE	Multipin Connector	Input/output connector for analog voice orderwire.
(L)	STATION CLOCK AND ALARM	Multipin Connector	Input/output connector for station clock and alarm.

2-2. REAR PANEL CONNECTORS—Continued

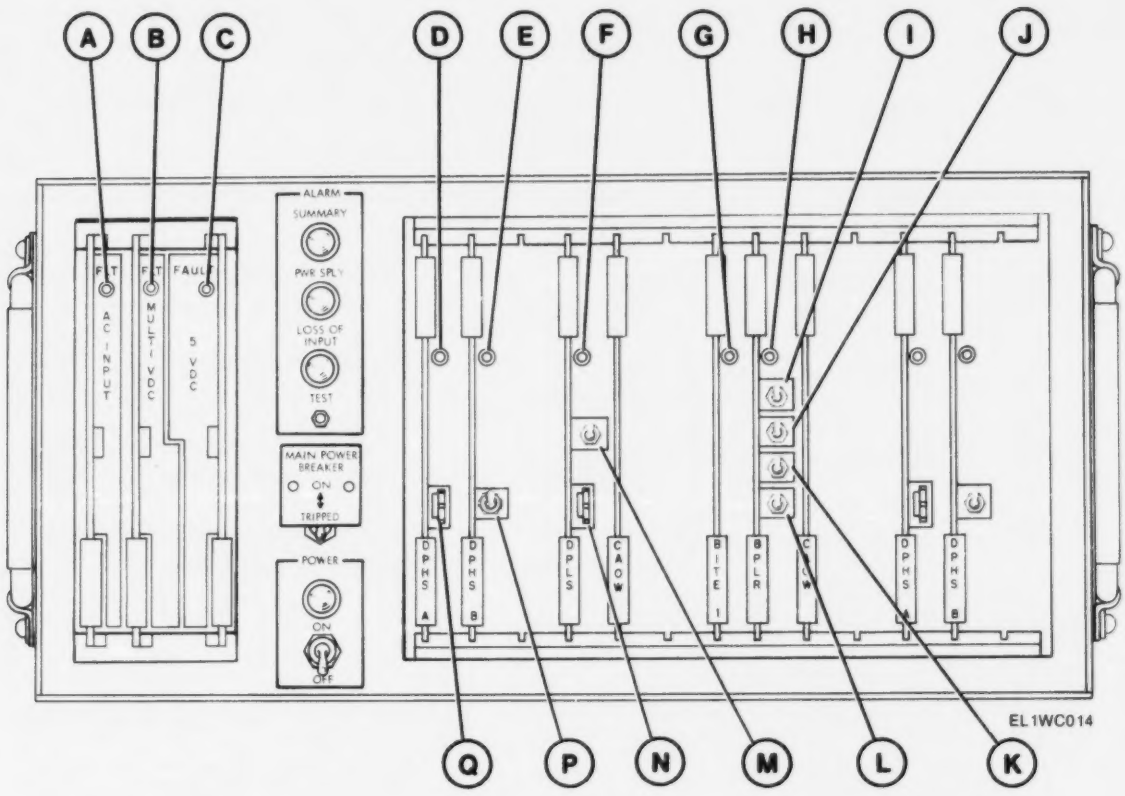


Key	Name	Type	Function
M	LINE SIGNAL OUT	BNC Connector	Output connector for line data output group 4.
N	LINE SIGNAL OUT	BNC Connector	Output connector for line data output group 3.
O	LINE SIGNAL OUT	BNC Connector	Output connector for line data output group 2.

2-2. REAR PANEL CONNECTORS—Continued

Key	Name	Type	Function
(P)	LINE SIGNAL OUT	BNC Connector	Output connector for line data output group 1.
(Q)	POWER	Part of RF Filter FL1	Ac line power connector.
(R)	GND	Binding Post	Ground connector
(S)	LINE SIGNAL IN	BNC Connector	Input connector for line data input group 1
(T)	LINE SIGNAL IN	BNC Connector	Input connector for line data input group 2
(U)	LINE SIGNAL IN	BNC Connector	Input connector for line data input group 3
(V)	LINE SIGNAL IN	BNC Connector	Input connector for line data input group 4

2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS

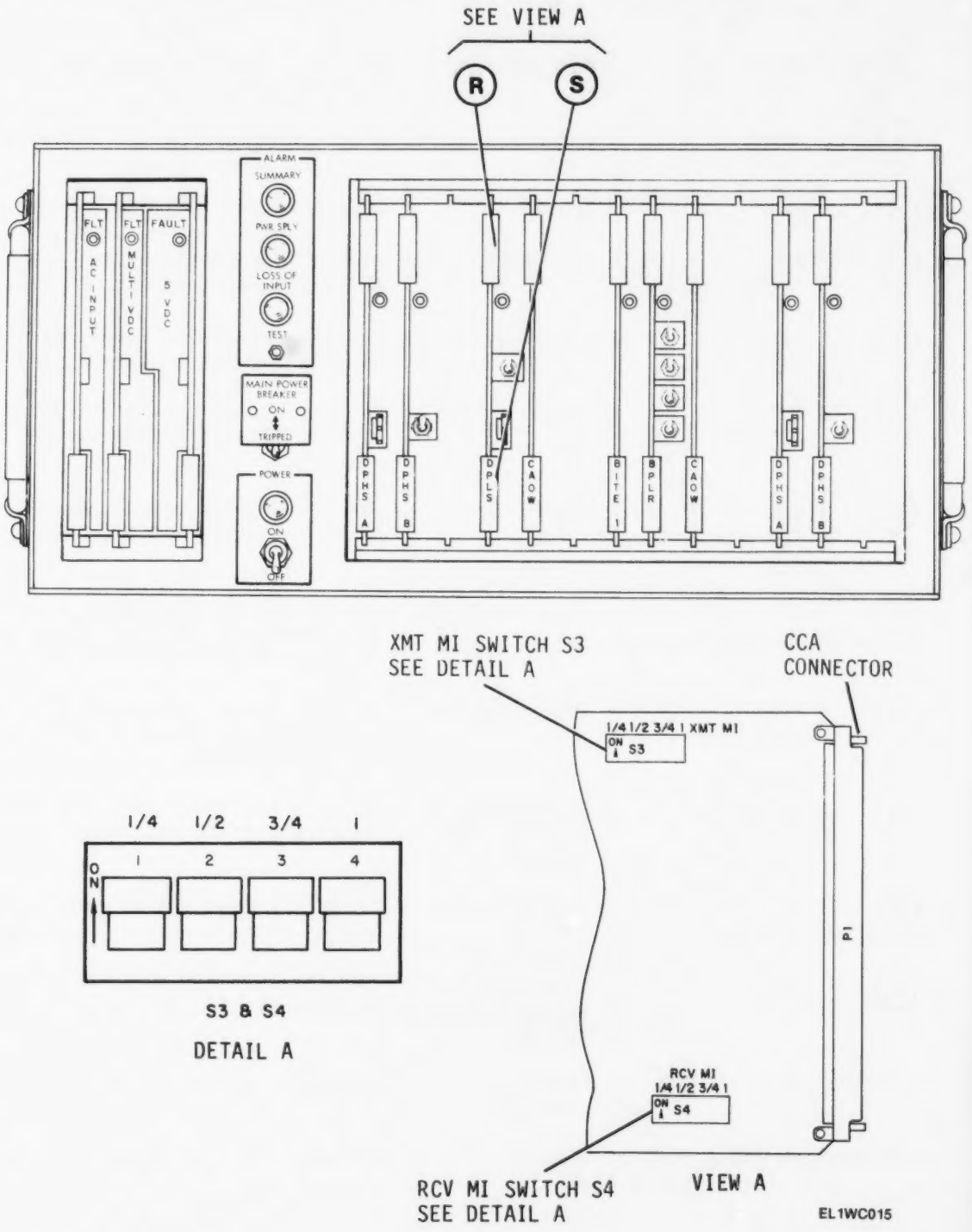


Key	Name	Type	Function
A	FAULT	Red LED	Lights if fault is detected on ac input CCA.
B	FAULT	Red LED	Lights if fault is detected on multi Vdc CCA.
C	FAULT	Red LED	Lights if fault is detected on 5 Vdc CCA.
D	FAULT	Red LED	Lights if DPHS A CCA malfunctions or lacks proper input.

2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS—Continued

Key	Name	Type	Function
(E)	FAULT	Red LED	Lights if DPHS B CCA malfunctions or lacks proper input.
(F)	FAULT	Red LED	Lights if DPLS CCA malfunctions or lacks proper input.
(G)	FAULT	Red LED	Lights if BITE 1 CCA malfunctions.
(H)	FAULT	Red LED	Lights if BPLR CCA malfunctions or lacks proper input.
(I)	GP 15/0	Toggle Switch	Selects either the enable or the disable NRZ data output function.
(J)	XMT 1/4 MI/1/2 MI	Toggle Switch	Selects appropriate transmission traffic circuit building out network.
(K)	RCV 1/4 MI/1/2 MI	Toggle Switch	Selects appropriate transmission traffic circuit building out network.
(L)	TRF NORM/LOOP	Toggle Switch	Selects either equipment side data or loops back received cable data for transmission.
(M)	TRF NORM/LOOP	Toggle Switch	Selects either equipment side data or loops back received cable data for transmission.
(N)	GP RATE	Thumbwheel, 5-position rotary switch	Selects required group transmit/receive traffic bit rate.
(P)	OW SYST/MAINT	Toggle Switch	Selects either system orderwire or analog voice orderwire function.
(Q)	RATE	Thumbwheel, 15-position rotary switch	Selects required group transmit/receive traffic bit rate.

2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS—Continued



2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS—Continued

Key	Name	Type	Function
(R)	XMT MI (S3)	4 Pole, Slide actuator Dip switch - DPST	Selects appropriate transmission traffic circuit building out network
(S)	RCV MI (S4)	4 Pole, slide actuator, Dip switch - DPST	Selects appropriate receive traffic circuit building out network

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-4. GENERAL

To be sure that your equipment is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS). The scheduled inspections allow defects to be discovered and corrected before they result in serious damage or failure.

2-5. OPERATOR PMCS TABLE

A PMCS table for the GM is provided below. There is one category or interval of PMCS: It heads the Interval column of the PMCS table. A dot in the Interval column indicates the check and/or service that you should perform at a particular time.

a. W stands for Weekly. W - PMCS are important preventive maintenance checks and services you make at weekly intervals to keep serious problems from suddenly happening. You should perform W - PMCS if:

- You are the assigned operator and have not operated the item since the last W - PMCS.
- You are operating the item for the first time.

2-5. OPERATOR PMCS TABLE—Continued

b. If your equipment fails to operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms (see DA PAM 738-750).

NOTE

Use your PMCS table Item no. column to get the number for the TM ITEM NO. column of DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when recording results of PMCS.

NOTE

If your equipment must be in operation all the time, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down or when orderwire channels are available.

c. Routine checks are not listed as PMCS checks. The following are some of the routine checks:

- Checking for frayed cables
- Storing items not in use
- Covering unused receptacles
- Checking for loose nuts, bolts, and screws
- Cleaning
- Washing
- Dusting

d. You should perform routine checks as the need comes up.

2-5. OPERATOR PMCS TABLE—Continued

DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

For use of this form, see TM 38-750; the proponent agency is the Office of the Deputy Chief of Staff for Logistics.

1. ORGANIZATION	2. NOMENCLATURE AND MODEL
126 Signal Company, Fort Myer, VA	

3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION
					13 Jun	PMCS

7. APPLICABLE REFERENCE

TM NUMBER	TM DATE	TM NUMBER	TM DATE

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

8a. SIGNATURE (Person(s) performing inspection)	8b. TIME	9a. SIGNATURE (Maintenance Supervisor)	9b. TIME	10. MANHOURS REQUIRED
Joseph D. Stetter	0920 hours			

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
11		Power indicator lamp failed to light.	Replaced bulb.	J.D.L

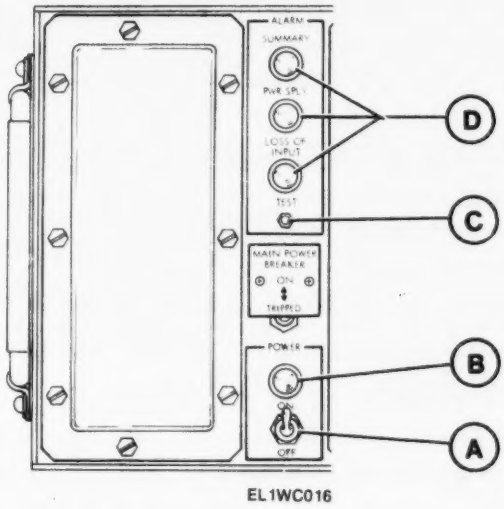
USE PMCS ITEM NO.

DA FORM 1 JAN 84 2404

EL1WC029

2-5. OPERATOR PMCS TABLE—Continued

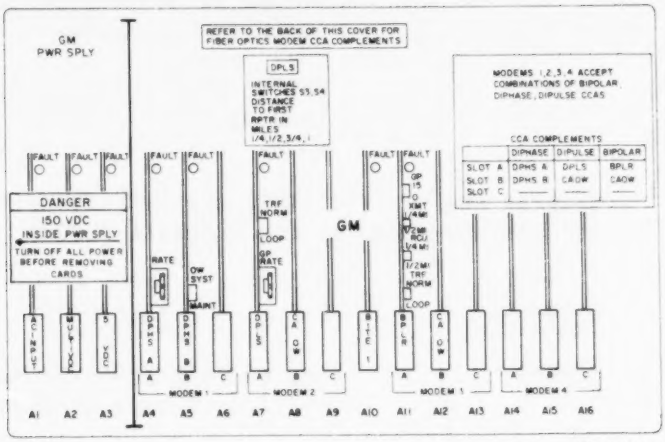
PMCS TABLE

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY.	FOR READINESS REPORTING EQUIPMENT IS NOT READY/ AVAILABLE IF:
	W			
1	•	GM BITE Test	 EL1WC016 (A) Set POWER ON/OFF switch to ON. (B) POWER lamp lights. (C) Press ALARM TEST switch. (D) ALARM SUMMARY, PWR SPLY, and LOSS OF INPUT lamps light.	POWER lamp does not light. ALARM SUMMARY, PWR SPLY, and LOSS OF INPUT lamps do not light, or if lamps stay on after switch is released.

Section III. OPERATION UNDER USUAL CONDITIONS

2-6. RESETTING CCA SWITCHES

After initial installation and operation of the GM, changes in system use may require resetting switches on the GM. If CCA switches must be reset, refer to the following table for switch setting data. Changes of system use will be directed by personnel at the system control point. Refer to road map on front cover.



EL1WC017

Switch Name	Function
DIPHASE A CCA RATE S1	Selects the traffic data rate for transmitting and receiving group date and timing.

Position	Bite Rate (kb/s)
0	OFF (Use this position when module is not used.)
1	72
2	128
3	144
4	256
5	288
6	512
7	576
8	1024
9	1152
10	1536
11	2048
12	2304
13	4096
14	4608

2-6. RESETTING CCA SWITCHES—Continued

Switch Name	Function
DIPHASE B CCA OW SYST/MAINT S1	Selects either the system (SYST) data orderwire and digital voice orderwire, or the maintenance (MAINT) analog voice orderwire communication mode.

Position	Setting
SYST	Set to this position for system (data orderwire and digital voice orderwire) communication mode.
MAINT	Set to this position for maintenance (analog voice orderwire) communication mode.

DIPULSE CCA TRF NORM/LOOP S1	Selects the traffic (TRF) transmission either normal (NORM) through the modem or the loopback (LOOP).

Position	Setting
NORM	Set to this position for normal transmission of data through modem.
LOOP	Set to this position provides loopback and is used in conjunction with TD754 fault locating routine.

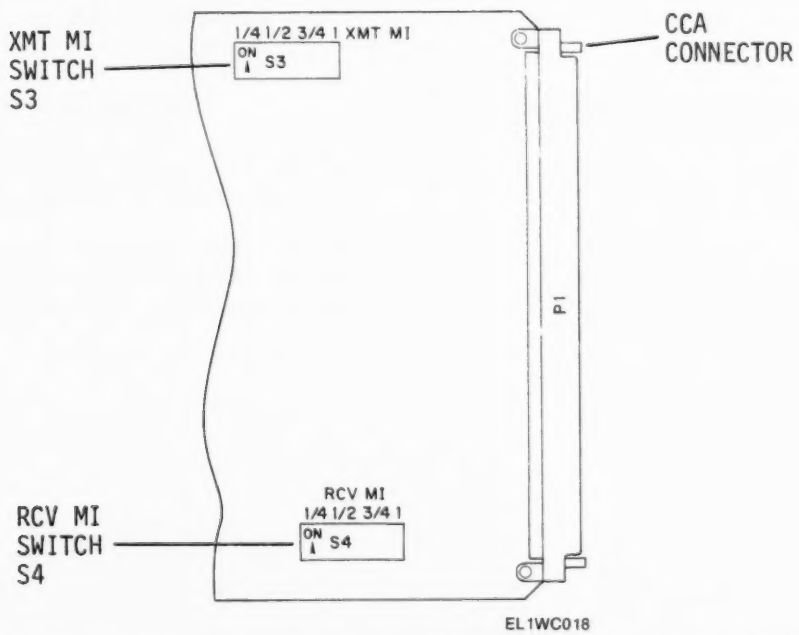
DIPULSE CCA GP RATE S5	Selects the traffic data rate for transmitting and receiving group data and timing.

Position	Bit Rate (kb/s)
0	OFF (Use this position when module is not used.)
5	288
7	576
9	1152
12	2304

2-6. RESETTING CCA SWITCHES—Continued

Switch Name	Function
DIPULSE CCA XMT MI S3	Selects transmit traffic circuit building out network applicable to transmission cable length, in miles, between GM and first pulse restorer.

Position When Pulse Restorer Not Used	Postion When Pulse Restorer is Used	Setting Data
1	1	Set to this position for 1/4 mile cable length.
2	2	Set to this position for 1/2 mile cable length.
3	3	Set to this position for 3/4 mile cable length.
4	4	Set to this position for 1 mile cable length.
*2	-	Set to this position for 0 mile cable length.



*Use these positions for 0 miles when loop back check is to be performed.

2-6. RESETTING CCA SWITCHES—Continued

Switch Name	Function
DIPULSE CCA RCV MI S4	Selects receive traffic circuit building out network applicable to transmission cable length, in miles, between GM and first pulse restorer.

Position When Pulse Restorer Not Used	Postion When Pulse Restorer is Used	Setting Data
3	1	Set to this position for 1/4 mile cable length.
4	2	Set to this position for 1/2 mile cable length.
1	3	Set to this position for 3/4 mile cable length.
4	4	Set to this position for 1 mile cable length.
*2	-	Set to this position for 0 mile cable length.

Switch Name	Function
BIPOLAR CCA TRF NORM/LOOP S1	Selects the traffic (TRF) transmission either normal (NORM) through the modem or the loopback (LOOP).

Position	Setting Data
NORM	Set to this position for normal transmission of data through the modem.
LOOP	Set to this position provides loopback and is used in conjunction with TD976 fault locating routine.

*Use these positions for 0 miles when loop back check is to be performed.

2-6. RESETTING CCA SWITCHES—Continued

Switch Name	Function
BIPOLAR CCA XMT 1/4 MI/1/2 MI S2	Selects transmit traffic circuit building out network applicable to transmission cable length, in miles, between GM and first pulse restorer.

Position When Pulse Restorer Not Used	Postion When Pulse Restorer is Used	Setting Data
1/4 MI	1/4 MI	Set to this position for 1/4 mile cable length.
1/2 MI	1/2 MI	Set to this position for 1/2 mile cable length.
*1/4 MI	-	Set to this position for 0 mile cable length.

Switch Name	Function
BIPOLAR CCA RCV 1/4 MI/1/2 MI S3	Selects receive traffic circuit building out network applicable to transmission cable length, in miles, between GM and first pulse restorer.

Position When Pulse Restorer Not Used	Postion When Pulse Restorer is Used	Setting Data
1/4 MI	1/4 MI	Set to this position for 1/4 mile cable length.
1/2 MI	1/2 MI	Set to this position for 1/2 mile cable length.
*1/4 MI	-	Set to this position for 0 mile cable length.

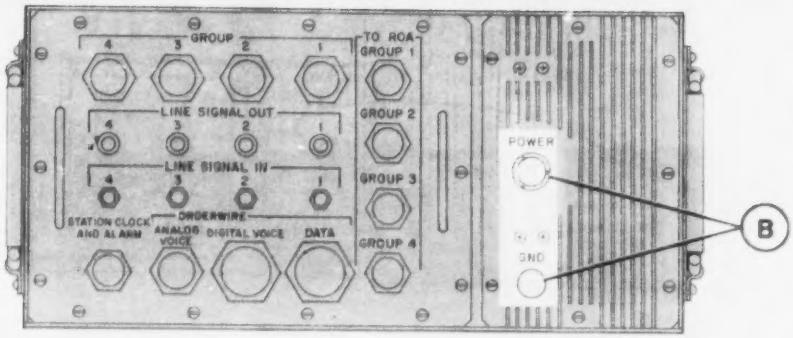
*Use these positions for 0 miles when loop back check is to be performed.

2-6. RESETTING CCA SWITCHES—Continued

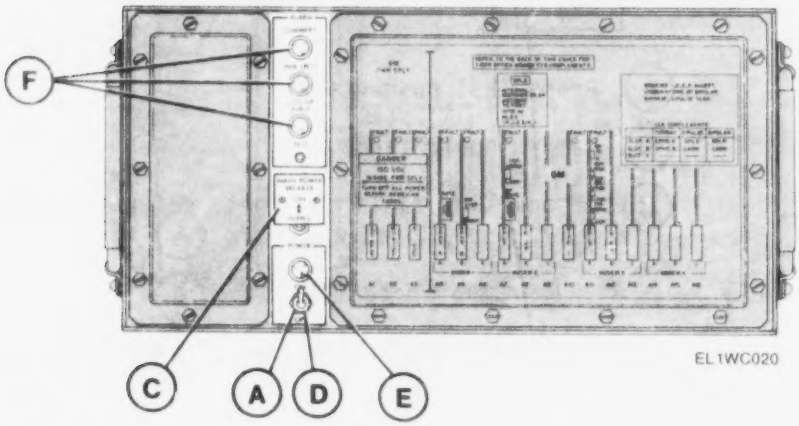
Switch Name	Function
BIPOLAR CCA GP 15/0 S4	Enables or disables NRZ data output driver and associated BITE circuit.

Position	Setting Data
15	Set to this position when module is used driver is enabled and processes data at the GP rate of 4915.2 kb/s. In addition the BITE circuit reports the operational status of the operating modem.
0	OFF. Set to this position when module is not used.

2-7. EQUIPMENT TURNON



EL1WC019



EL1WC020

(A) Insure POWER ON/OFF switch is OFF.

(B) Insure power cable is connected. Insure GM is grounded.

(C) Insure MAIN POWER BREAKER is ON.

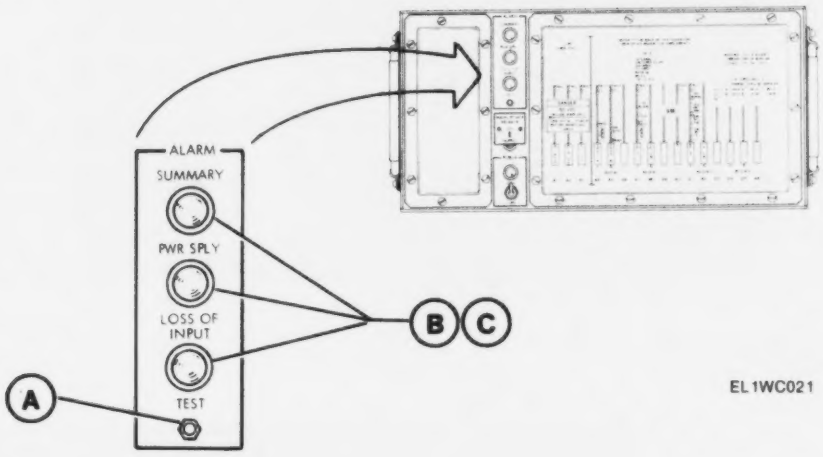
(D) Set POWER ON/OFF switch is ON.

(E) POWER lamp lights.

(F) After 5-second warmup, these ALARM lamps should be off. If not, see Chapter 4, Section IV, Troubleshooting.

2-8. OPERATOR CHECKS

The only operator check required is a BITE test. System must be operating.

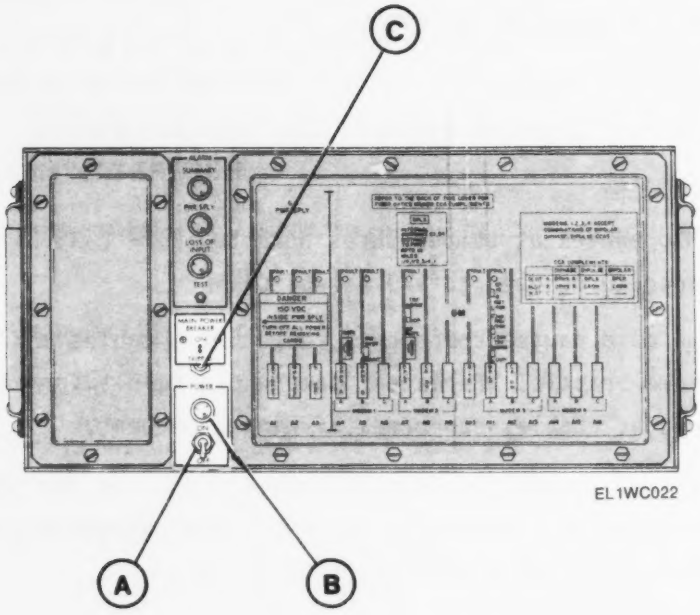


(A) Press TEST pushbutton.

(B) Lamps should light.

(C) If any lamp fails to light, refer to organizational level maintenance.

2-9. EQUIPMENT TURNOFF



EL1WC022

(A) Set POWER ON/OFF switch to OFF.

(B) POWER lamp goes off.

(C) Leave MAIN POWER BREAKER ON.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-10. OPERATING IN UNUSUAL WEATHER

Although intended for use inside a heated/ air-conditioned shelter, the GM will operate in the following environments:

a. Arctic Climate.

- The GM operates at temperatures down to -25°F (-32°C) and can be stored at temperatures down to -70°F (-57°C).
- Extreme cold causes components, especially cables and plastic components, to become brittle. Permanent damage can result from mechanical shock to components. Cables can break if kinked or bent.
- When cold equipment is brought into a warm room, moisture will condense on its surfaces. Before operation, allow equipment to warm to room temperature, then dry thoroughly with cloth.

b. Tropical Climate.

- The GM operates at temperatures as high as +145°F (+63°C) and can be stored at temperatures as high as +160°F (+71°C).
- Extreme heat and humidity can cause moisture and fungus growth which can cause improper operation. Keep cover on as much as possible and ventilate the equipment as often as possible.

c. Desert Climate.

- The GM operates at temperatures up to +145°F (+63°C) and can be stored at temperatures up to +160°F (+71°C).
- Windblown sand, dirt, or dust will damage the equipment. Keep cover on as much as possible.

d. Salt Air.

- Salt air can corrode the connectors and controls on the GM. Keep cover on as much as possible and clean surfaces with damp cloth (fresh water).

2-10. OPERATING IN UNUSUAL WEATHER—Continued

e. High Altitudes.

- The GM can operate at altitudes up to 10,000 feet and can be stored at altitudes up to 40,000 feet.

2-11. ELECTRICAL INTERFERENCE

Observe the following guidelines to minimize electrical interference caused by external sources:

a. Keep ground connections secure.

b. Keep cable connections secure.

c. Keep captive screws on the CCA covers secure.

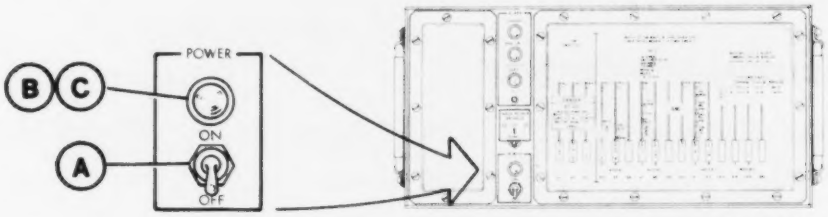
2-12. EMERGENCY PROCEDURES

NOTE

Any shelter or facility circuit breaker controlling power to the GM may control power to other equipment. Assure that the emergency warrants turning off the other equipment before operating this circuit breaker.

2-12. EMERGENCY PROCEDURES—Continued

a. Emergency Turn-Off. There are no special emergency turn-off procedures. In an emergency, perform the following:



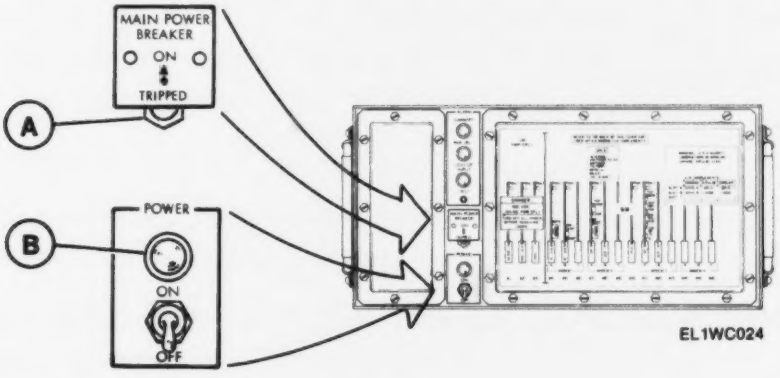
EL1WC023

(A) Quickly set POWER ON/OFF switch to OFF.

(B) POWER indicator lamp should go out.

(C) If POWER indicator fails to go out, trip external circuit breaker supplying facility power to the GM.

b. Power Transients. If power to the GM varies widely, MAIN POWER BREAKER may trip. If this occurs:



EL1WC024

(A) Set MAIN POWER BREAKER to ON.

(B) POWER indicator lamp should light.

CHAPTER 3
OPERATOR MAINTENANCE

For the purpose of this manual, crew and operator maintenace are one and the same.

CHAPTER 4
ORGANIZATIONAL MAINTENANCE

		Page
Section I	Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	4-2
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4-2	Special Tools, TMDE, and Support Equipment	4-2
4-3	Repair Parts	4-2
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4-4	Unpacking	4-3
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4-17	Removal and Replacement of Power Supply CCAs	4-25

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit. For Air Force, refer to appropriate Table of Allowances.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

For Repair Parts and Special Tools List (RPSTL), refer to TM 11-5805-705-24P (Army) or TO 31W2-2G-354 (USAF).

Maintenance tools and equipment as authorized by the Maintenance Allocation Chart (refer to Appendix B, MAC) for organizational maintenance are as follows:

Tool Kit, Electronic Equipment TK-101/G, 1 each

4-3. REPAIR PARTS

Repair parts are listed and illustrated in the RPSTL (TM 11-5805-705-24P) covering operator and organizational maintenance for the GM. For Air Force, refer to TO 31W2-2G-354.

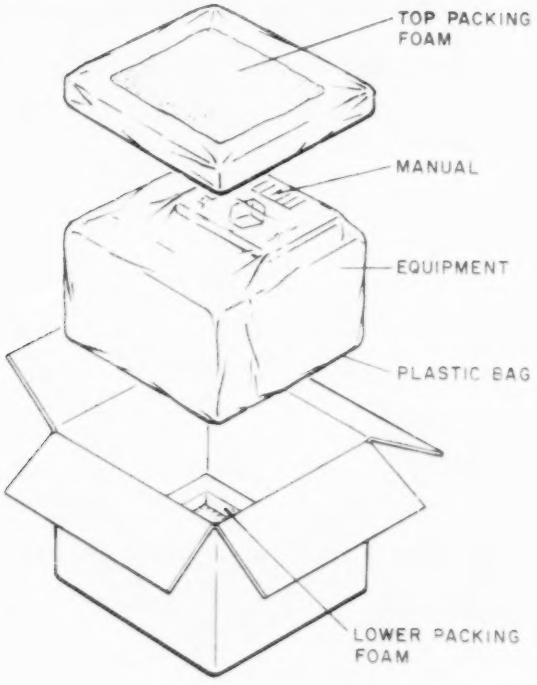
Section II. SERVICE UPON RECEIPT

WARNING

HEAVY EQUIPMENT

This equipment weighs over 35 pounds and can cause serious injury if lifted or carried alone. Do not attempt to lift, carry, or move the equipment by yourself -- use at least two persons.

4-4. UNPACKING



EL1WC025

a. Open.

- Use sharp knife to cut reinforcing tape on top of carton.
- Open top of box.

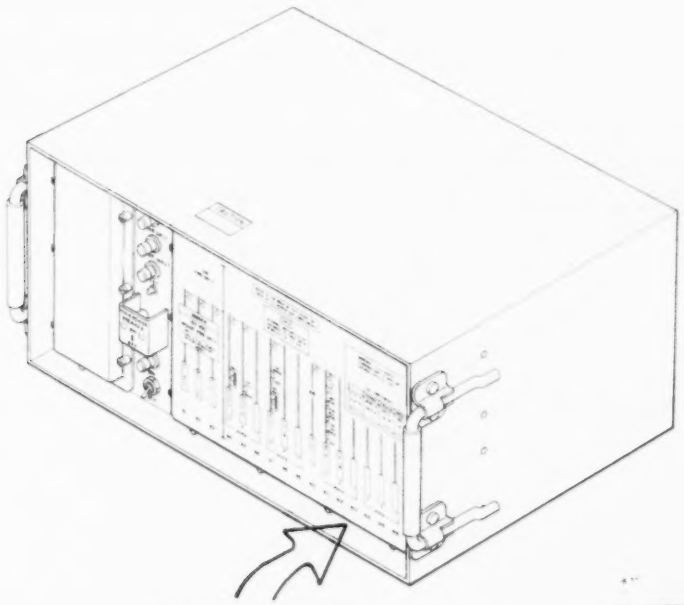
b. Remove GM.

- Lift out top packing.
- Lift out equipment including manual.
- Use sharp knife to slit plastic bag.
- Remove manual and equipment with tab of hardware attached.

4-5. CHECKING UNPACKED EQUIPMENT

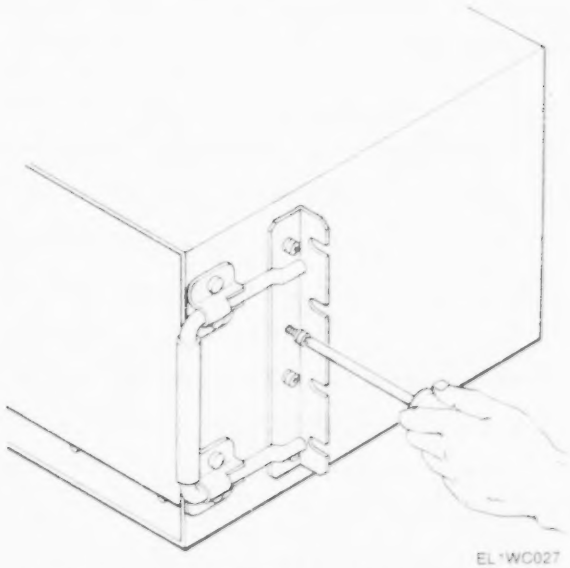
a. Damage. Inspect the equipment for damage incurred during shipment. If equipment has been damaged, report the damage on SF 364 (Report of Discrepancy (ROD)). For Air Force, use DD Form 173 (Material Deficiency Report (Category 1)).

b. Packing Slip. Check equipment against the packing slip to see if shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.



c. Modifications. Check DA Pam 310-1, Consolidated Index of Army Publications and Blank Forms, for Modification Work Orders (MWO) applicable to this equipment. Compare MWO number (if any) obtained from DA Pam 310-1 with that on equipment. If numbers disagree, equipment must be modified.

4-6. INSTALLATION OF MOUNTING BRACKETS



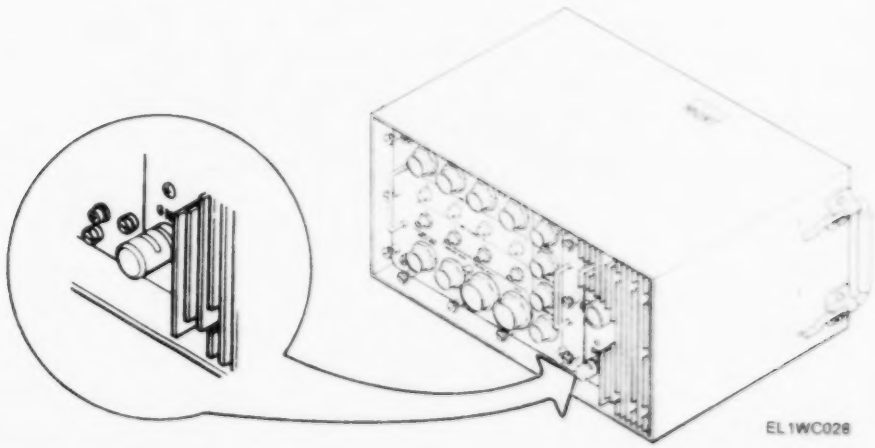
EL1WC027

a. Remove mounting brackets and attaching hardware from bag.

b. Install one mounting bracket to each side of equipment case using No. 2 Phillips screwdriver, four screws and four flat washers.

4-7. GROUNDING

A ground wire should be attached to ground lug at rear of GM, and remain in place while equipment is installed.



EL1WC028

Section III. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-8. GENERAL

To be sure that your equipment is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS). When you are doing any PMCS or routine checks, keep in mind WARNINGS and CAUTIONS about electrical shock and bodily harm.

4-9. PMCS TABLE

A PMCS table for Digital Data Modem MD-1026(P)/G appears at the end of this secti There is one category or interval of PMCS: B. It heads the Interval column of th PMCS table. A dot in the Interval column indicates the check and/or service that should be performed by organizational maintenance personnel at a particular time.

a. B stands for before. B - PMCS should be performed before operation to mak sure your equipment is ready to go.

NOTE

Use your PMCS table to get the number for the TM ITEM NO. column of DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

NOTE

If your equipment must be in operation all the time, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down or when orderwire channels are available.

4-9. PMCS TABLE—Continued

b. Whenever an equipment is reinstalled after removal for any reason, perform the necessary B - PMCS to be sure that the item meets the readiness reporting criteria.

c. Routine checks are not listed as PMCS checks. The following are some of the routine checks:

- Checking for frayed cables
- Storing items not in use
- Covering unused receptacles
- Checking for loose nuts, bolts, and screws
- Cleaning
- Dusting
- Washing

d. You should perform routine checks as the need comes up.

4-9. PMCS TABLE—Continued

DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

For use of this form, see TM 38-750; the proponent agency is the Office of the Deputy Chief of Staff for Logistics.

1. ORGANIZATION						2. NOMENCLATURE AND MODEL	
126 Signal Company, Fort Myer, VA							
3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION	
					13 Jun	PMCS	

7. APPLICABLE REFERENCE

TM NUMBER	TM DATE	TM NUMBER	TM DATE

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

8a. SIGNATURE (Person(s) performing inspection)	8b. TIME	9a. SIGNATURE (Maintenance Supervisor)	9b. TIME	10. MANHOURS REQUIRED
Joseph D. Potter	0920 hours			

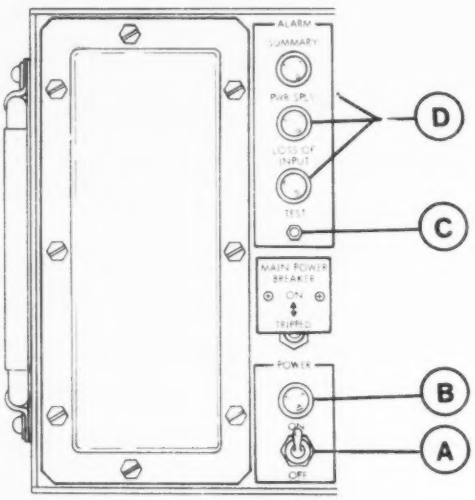
TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
11		Power indicator lamp failed to light.	Replaced bulb.	J.D.L

USE PMCS ITEM NO.

DA FORM 1 JAN 64 2404

EL1WC029

4-9. PMCS TABLE—Continued

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY.
	W		
			 EL1WC016
1	•	POWER ON	(A) Set POWER ON/OFF switch to ON. (B) POWER lamp lights.
2	•	BITE Test	(C) Press ALARM TEST switch. (D) ALARM SUMMARY, PWR SPLY, and LOSS OF INPUT lamps light.

Section IV. TROUBLESHOOTING

4-10. TROUBLESHOOTING PROCEDURE

Troubleshooting the GM is normally initiated by the maintenance supervisor system control point. A probable malfunction in the GM is identified by the system control point personnel, who interpret equipment fault alarm indicators on the system status console. Upon diagnosing a probable fault to the GM, the system control point so notifies the organization, which then uses the following flowcharts to locate the fault.

The flowchart information is based on visual symptoms obtained from the GM BITE lamps. Before troubleshooting, check to see that all CCA switches are set as directed by the system control point.

The flowchart is a step-by-step path through the GM. All decisions are made in the diamond shaped (◇) boxes and require a yes or no answer. All instructions are given in the rectangular shaped boxes (▭) and must be accomplished before moving on with the procedure. When the word END is reached, the fault should be corrected.

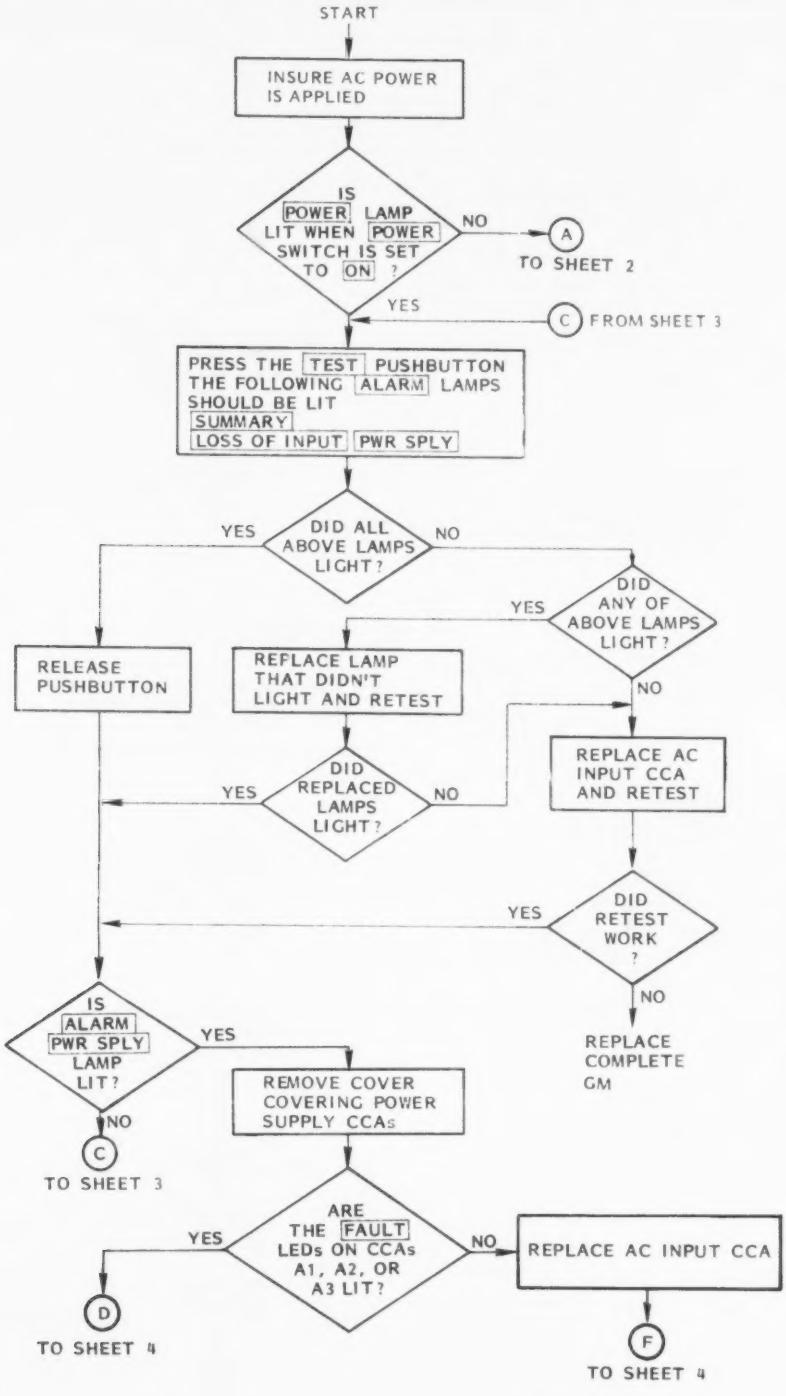
When replacing a CCA that has settable switches:

a. Note positions of switches on old CCA.

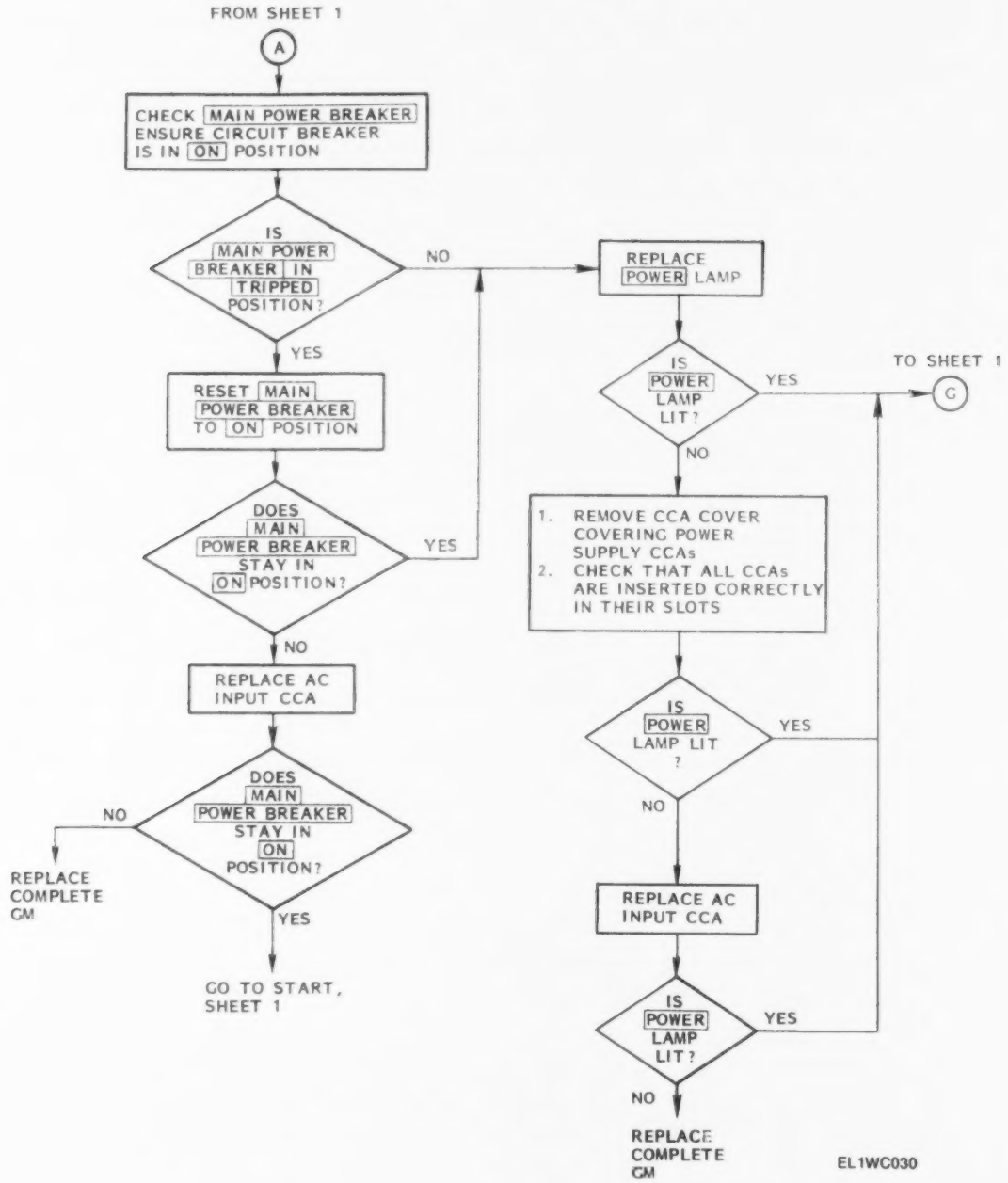
b. Set switches on new CCA in same positions.

If faults occur during system setup, check to see that all switches are properly set.

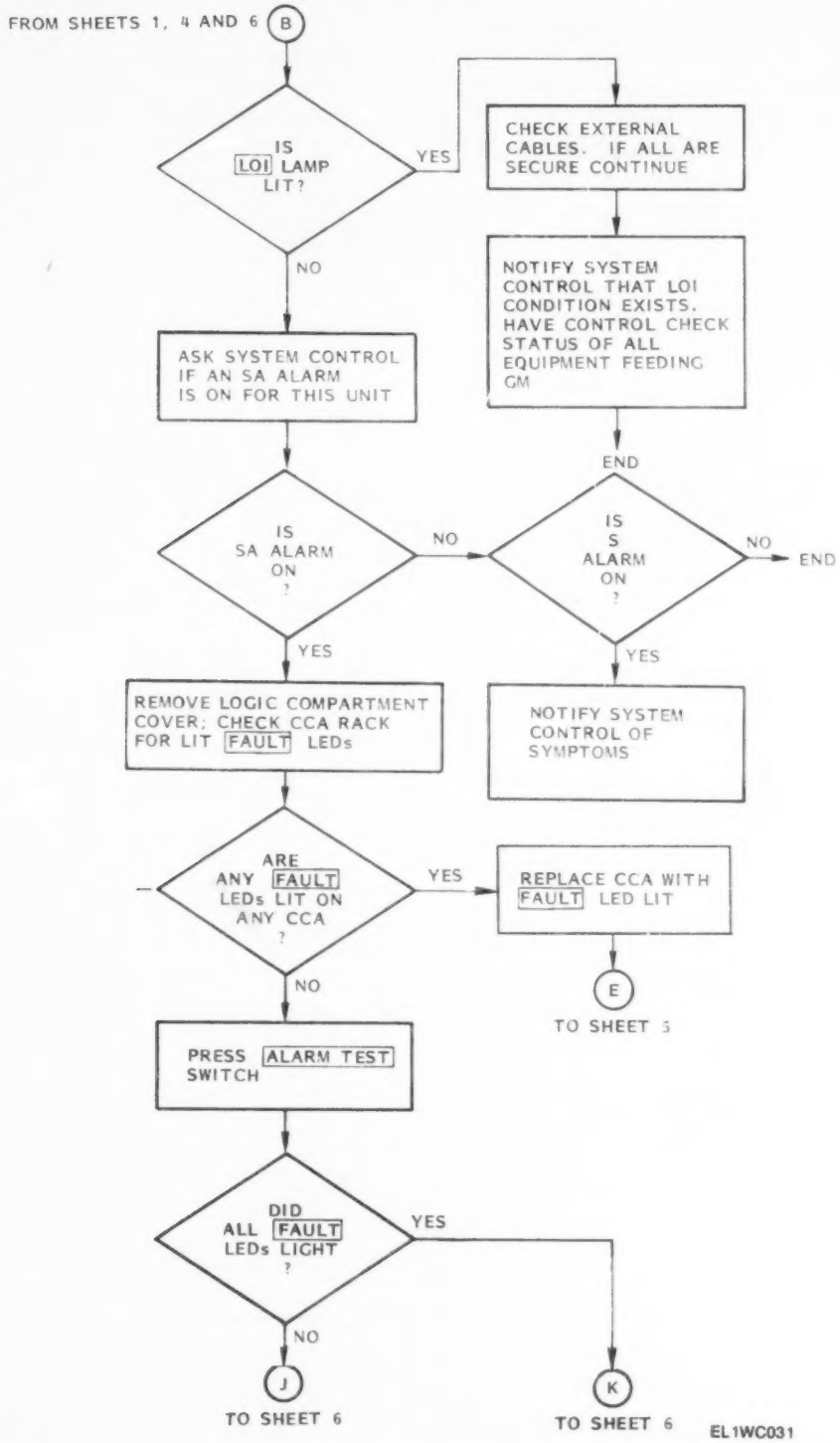
4-11. TROUBLESHOOTING FLOWCHART—Sheet 1 of 6



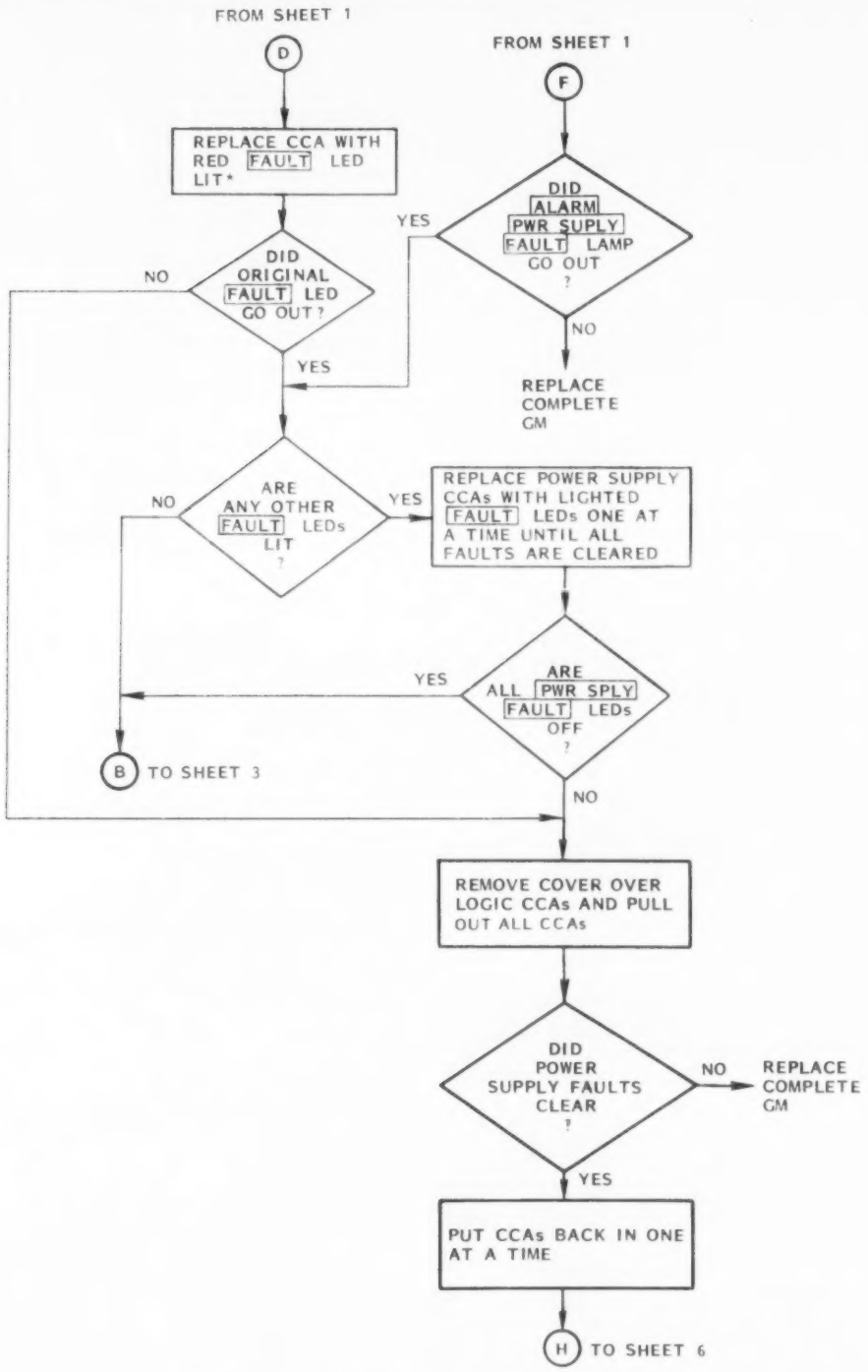
4-11. TROUBLESHOOTING FLOWCHART—Sheet 2 of 6



4-11. TROUBLESHOOTING FLOWCHART—Sheet 3 of 6



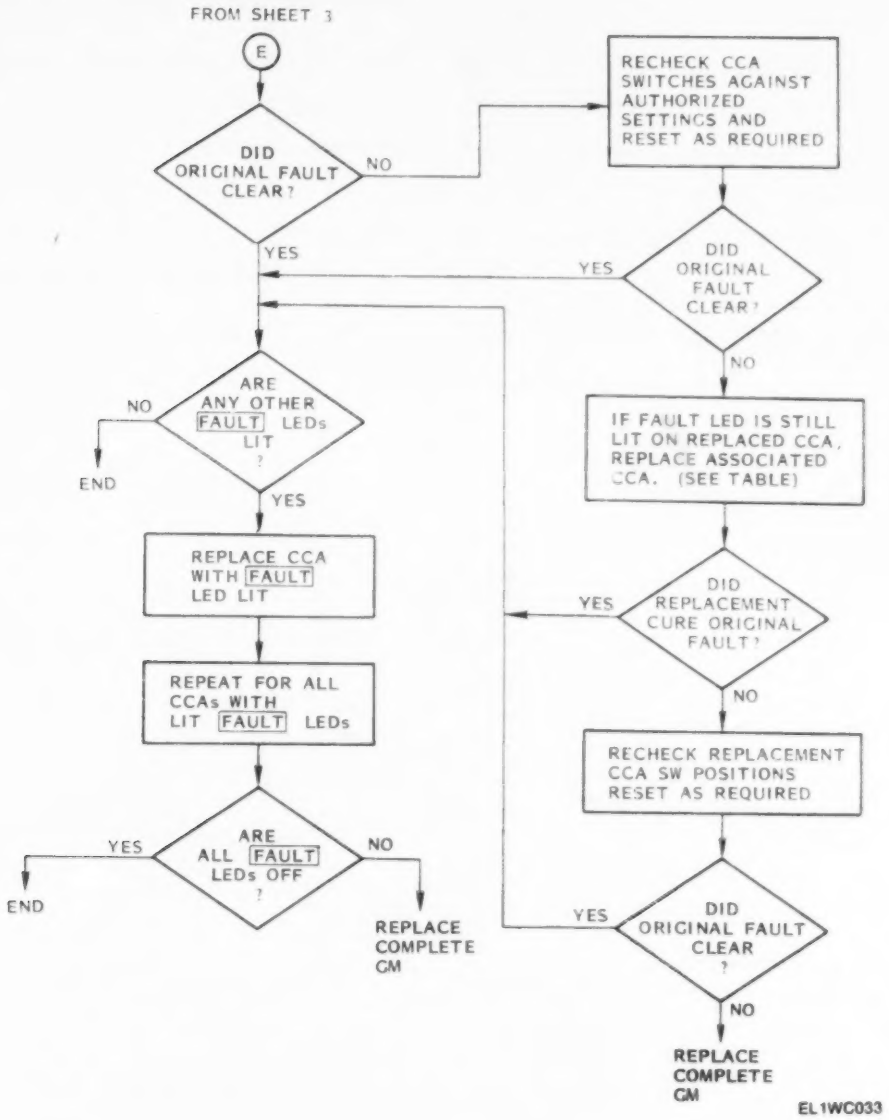
4-11. TROUBLESHOOTING FLOWCHART—Sheet 4 of 6


FROM SHEET 1
D
REPLACE CCA WITH RED FAULT LED LIT*
DID ORIGINAL FAULT LED GO OUT?
NO
YES
FROM SHEET 1
F
DID ALARM PWR SUPLY FAULT LAMP GO OUT ?
YES
NO
REPLACE COMPLETE GM
ARE ANY OTHER FAULT LEDs LIT ?
NO
YES
REPLACE POWER SUPPLY CCAs WITH LIGHTED FAULT LEDs ONE AT A TIME UNTIL ALL FAULTS ARE CLEARED
ARE ALL PWR SPLY FAULT LEDs OFF ?
YES
B TO SHEET 3
NO
REMOVE COVER OVER LOGIC CCAs AND PULL OUT ALL CCAs
DID POWER SUPPLY FAULTS CLEAR ?
NO
REPLACE COMPLETE GM
YES
PUT CCAs BACK IN ONE AT A TIME
H TO SHEET 6

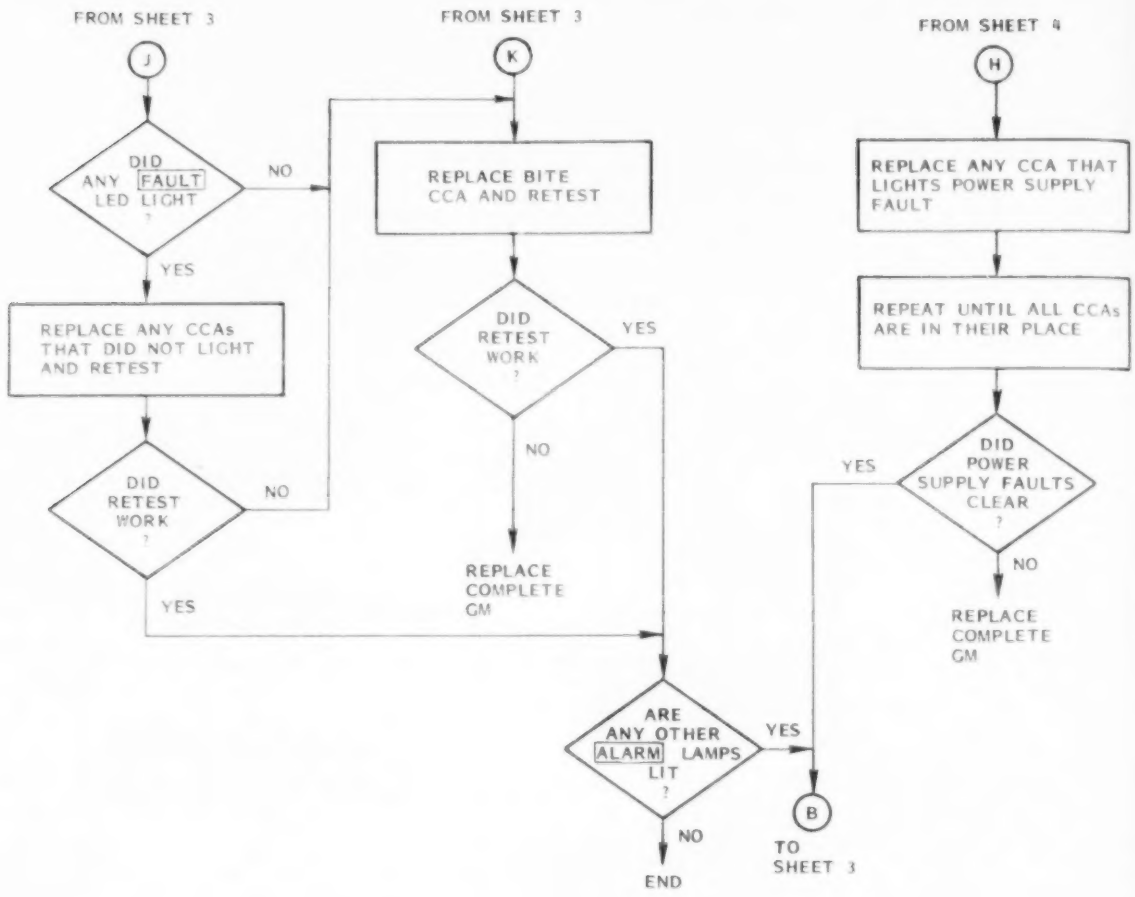
*REPLACE A1 CCA FIRST IF ITS FAULT LED IS ON

EL1WC032

4-11. TROUBLESHOOTING FLOWCHART—Sheet 5 of 6



4-11. TROUBLESHOOTING FLOWCHART—Sheet 6 of 6



TABLE

CCA REPLACED	ASSOCIATED CCA
DIPHASE A	DIPHASE B, BITE 1
DIPHASE B	DIPHASE A, BITE 1
BIPOLAR	CABLE ORDERWIRE, BITE 1
DIPULSE	CABLE ORDERWIRE, BITE 1
CABLE ORDERWIRE	BIPOLAR OR DIPULSE*, BITE 1

*DEPENDS ON CONFIGURATION.

EL1WC034

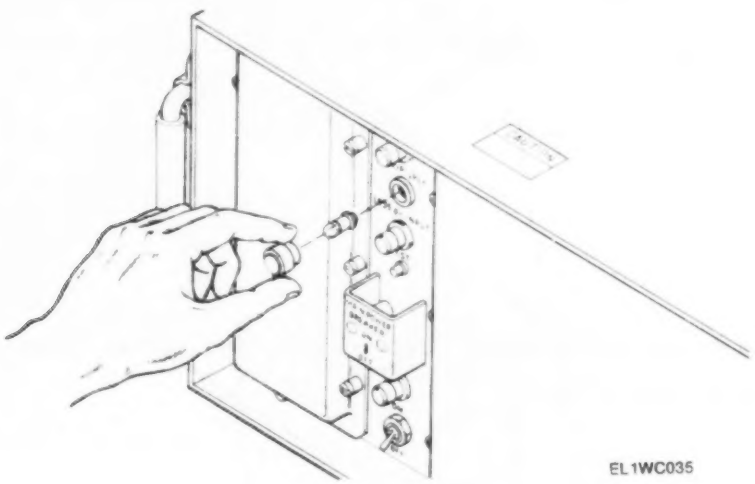
Section V. MAINTENANCE PROCEDURES

4-12. ORGANIZATIONAL MAINTENANCE

Organizational corrective maintenance of the GM consists of removing and replacing those items found to be defective during troubleshooting. These procedures are limited to removal and replacement of lamp bulbs, cover assemblies, circuit card assemblies.

4-13. REMOVAL AND REPLACEMENT OF LAMPS

Only the lamps for the SUMMARY, PWR SPLY, LOSS OF INPUT, and POWER lights are replaceable at the organizational maintenance level.



EL1WC035

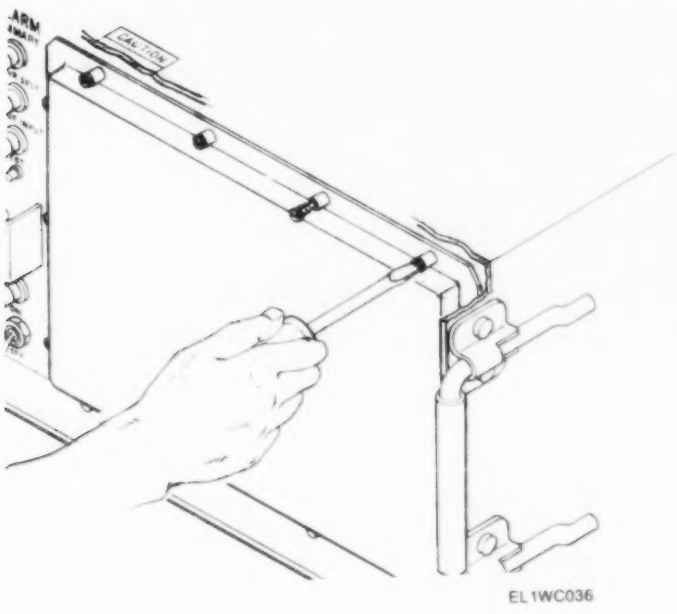
REMOVAL

1 Turn lens assembly counterclockwise and remove.
2 Pull lamp loose from lens assembly and remove.

REPLACEMENT

1 Press new lamp into lens assembly.
2 Reinstall lens assembly and turn clockwise to secure.

4-14. REMOVAL AND REPLACEMENT OF LOGIC CCA COMPARTMENT COVER ASSEMBLY



REMOVAL

- Using flat blade screwdriver, loosen 14 captive screws securing CCA cover assembly and remove cover.

REPLACEMENT

- Install CCA cover assembly and secure 14 captive screws, using flat blade screwdriver. Do not overtighten.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs

CAUTION

Static discharge can damage microcircuit components on CCAs. To avoid this damage, observe the following:

(1) Handle CCAs by their edges only.

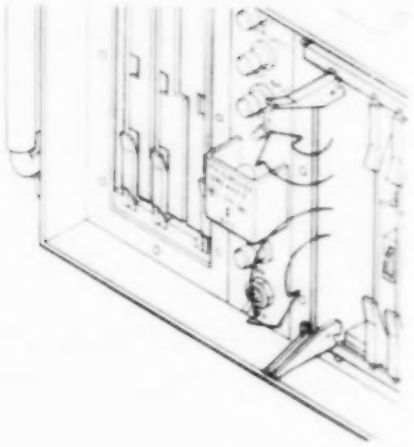
(2) Do not wrap, store, or ship CCAs in plastic bags; use containers made of heavy paper or aluminum foil.

(3) Do not rub CCAs against clothing or wipe with a cloth made with synthetic fibers (plastic, acrylic, nylon, etc.).

PRELIMINARY PROCEDURES

- Remove logic CCA compartment cover in accordance with paragraph 4-14.

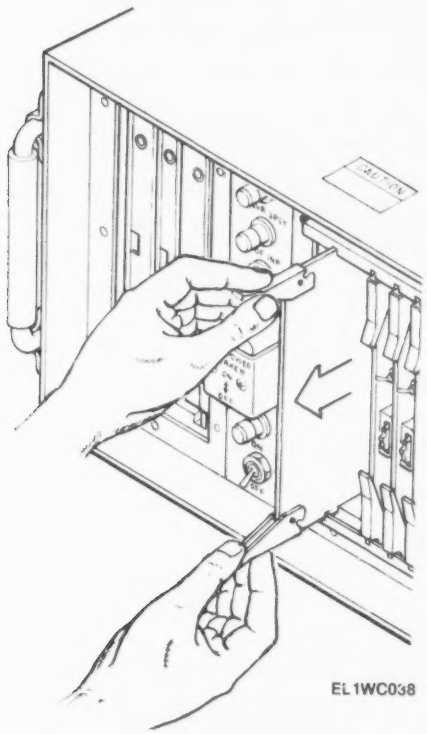
REMOVAL



EL1WC037

1 Swing out both levers on card at the same time to disengage card from connector.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs—Continued



2 Carefully pull out card.

3 Note positions of any CCA switches.

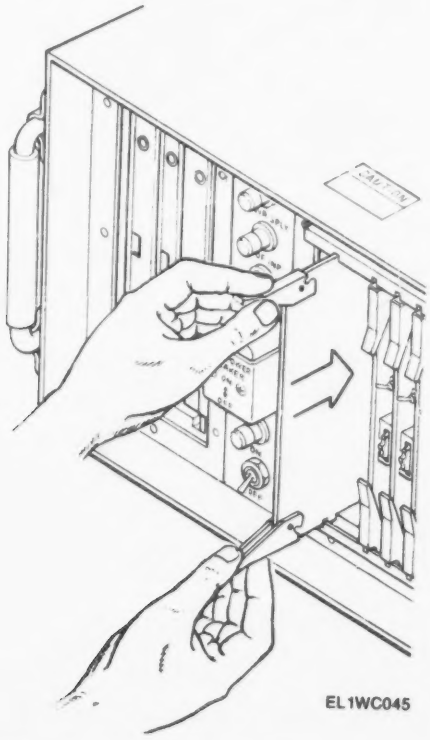
4 Set any switches on replacement CCA to positions noted on removed CCA.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs—Continued

REPLACEMENT

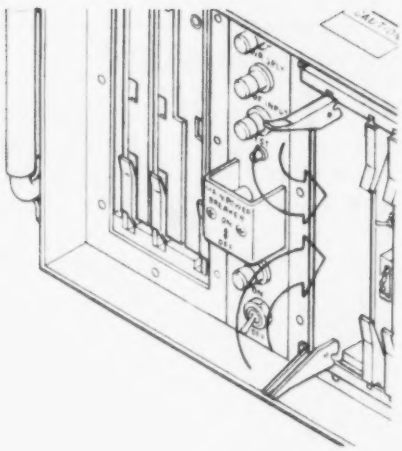
CAUTION

Damage will result if excessive force is used to insert cards. If cards cannot be inserted with reasonable force, insure card identification on card extractor matches than on slot. Insure that levers are straight out before insertion.



1 Aline card in slot and carefully push in. As card begins to engage, levers will begin to move in.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs—Continued



EL1WC044

2 When card is properly in place, swing in both levers at the same time to engage card in connector.

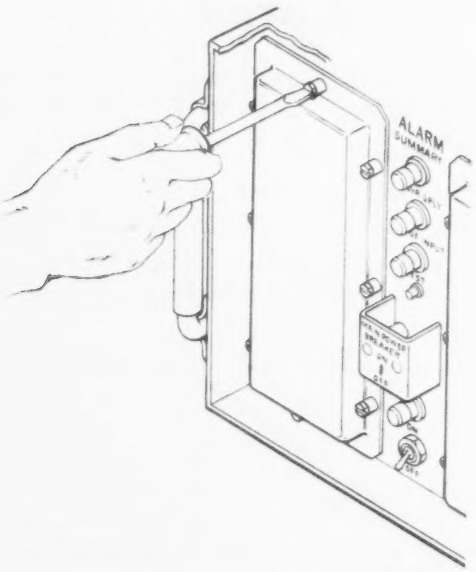
3 Replace logic CCA compartment cover in accordance with paragraph 4-14.

4-16. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCA COMPARTMENT COVER ASSEMBLY

WARNING

HIGH VOLTAGE

The high voltage used in this equipment can kill on contact. Ground the equipment. Avoid the 115-volt ac input. Do not service alone. Where possible, use one hand to service.



EL1WC046

REMOVAL

- Using flat blade screwdriver, loosen eight captive screws securing CCA cover assembly and remove cover.

REPLACEMENT

- Install CCA cover assembly and secure eight captive screws. Do not overtighten.

4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs

WARNING

HIGH VOLTAGE

The high voltage used in this equipment can kill on contact. Ground the equipment. Avoid the 115-volt ac input. Do not service alone. Where possible, use one hand to service.

CAUTION

Static discharge can damage microcircuit components on CCAs. To avoid this damage, observe the following:

(1) Handle CCAs by their edges only.

(2) Do not wrap, store, or ship CCAs in plastic bags; use containers made of heavy paper or aluminum foil.

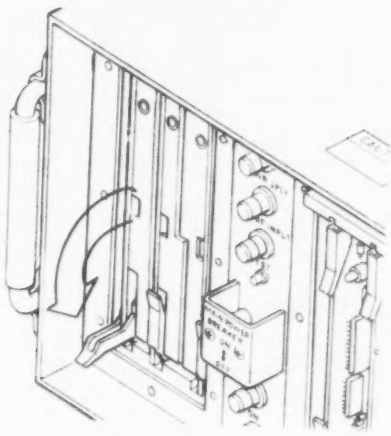
(3) Do not rub CCAs against clothing or wipe with a cloth made with synthetic fibers (plastic, acrylic, nylon, etc.).

PRELIMINARY PROCEDURES

- Set front panel POWER ON/OFF switch to OFF.
- Remove power supply CCA compartment cover in accordance with paragraph 4-16.

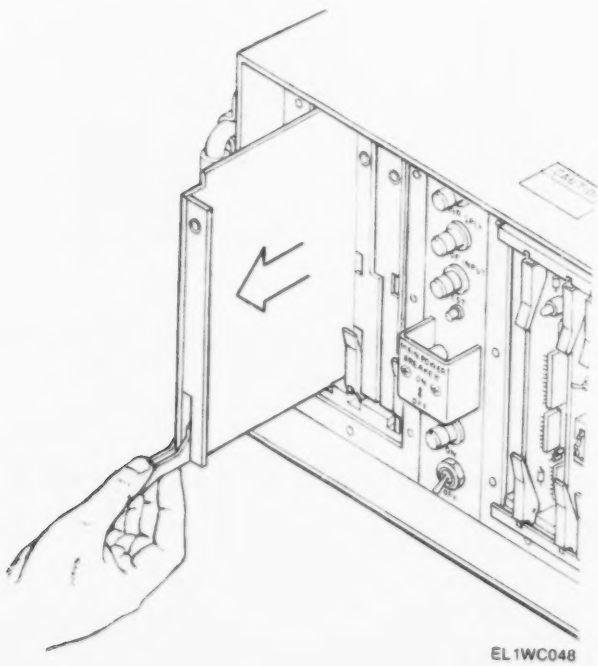
4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs—Continued

REMOVAL



EL1WC047

1 Swing out lever on bottom of card to disengage card from connector.



EL1WC048

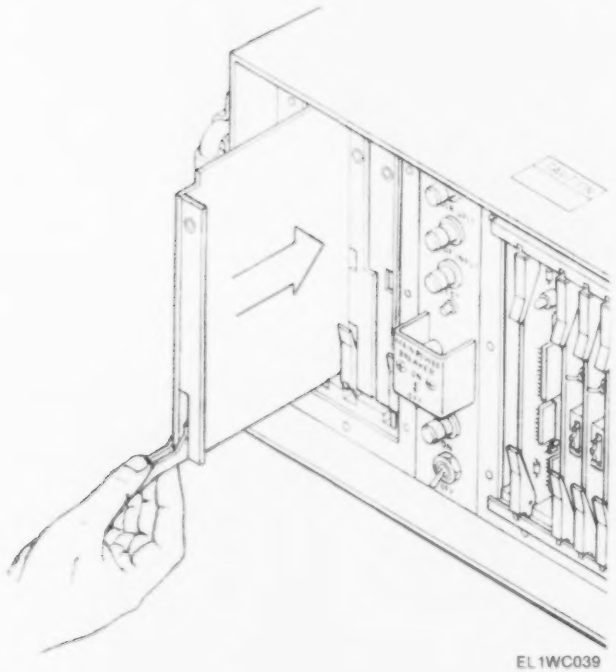
2 Carefully pull out card.

4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs—Continued

REPLACEMENT

CAUTION

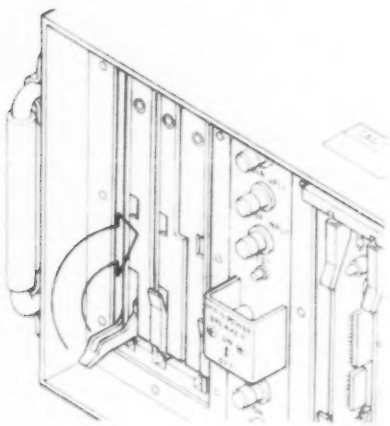
Damage will result if excessive force is used to insert cards. If cards cannot be inserted with reasonable force, insure card identification on red anodized frame matches that on slot. Insure that levers are straight out before insertion.



EL1WC039

1 Aline card in slot and carefully push in. As card begins to engage, lever will begin to move in.

4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs—Continued



EL1WC040

2 Insure CCA is properly seated, then swing in lever.

3 Replace power supply CCA compartment cover in accordance with paragraph 4-16.

4 Set front panel POWER ON/OFF switch to ON.

APPENDIX A
REFERENCES

A-1. SCOPE

This appendix lists all forms, technical publications, and miscellaneous publications referenced in the manual.

A-2. FORMS

Technical Order System Publication Improvement Report and Reply	AFTO Form 22
Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Publications	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Discrepancy in Shipment Report (DISREP)	SF 361
Report of Discrepancy (ROD)	SF 364
Material Deficiency Report (Category 1)	DA Form 173
Quality Deficiency Report (Category 2)	SF 368

A-3. TECHNICAL MANUALS

Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command)	TM 750-244-2
Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Modem MD-1026(P)/G (NSN 5820-01-145-4945)	TM 11 5085-705-24P

A-4. REGULATIONS

Report of Transportation Discrepancies in Shipments	AR 55-38
Reporting of Item and Packaging Discrepancies	AR 735-11-2

A-5. MISCELLANEOUS PUBLICATIONS

Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)	CTA 50-970
Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1
The Army Maintenance Management System (TAMMS).....	DA Pam 738-750
Federal Supply Code for Manufacturers (FSCM)	SB 708-42

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. GENERAL

a. This appendix provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

e. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

B-2. MAINTENANCE FUNCTIONS—Continued

f. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow proper functioning of an equipment or system.

g. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and is shown as the third position code of the SMR code.

h. Repair. The application of maintenance services including fault location/troubleshooting removal/installation and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

i. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like-new condition.

j. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II

a. Column 1, Group Number. This column lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00".

b. Column 2, Component/Assembly. This column contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. This column lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Category. This column specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II—Continued

figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C ..... Operator or Crew
O ..... Organizational Maintenance
F ..... Direct Support Maintenance
H ..... General Support Maintenance
D ..... Depot Maintenance

e. Column 5, Tools and Equipment. This column specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III

a. Column 1, Reference Code. The tool and test equipment code correlates with a code used in the MAC, Section II, column 5.

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National Stock Number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV

a. Column 1, Reference Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

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Section II. MAINTENANCE ALLOCATION CHART FOR MULTIPLEXER MD-1026(P)/G

GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGORY					TOOLS AND TE	REMARKS
			C	O	F	H	D		
00	MODEM, DIGITAL DATA MD-1026(P)/G (PN SM-D-875932)	INSPECT		1.00				10	A
		SERVICE		0.10				10	B
		REPAIR		2.00				09, 10	C
		INSPECT			0.60			11, 44, 45	A
		TEST			3.80			03, 09, 11, 12, 13, 14, 30, 31, 32, 33, 44, 45	D
		REPAIR			1.30			03, 09, 11, 12, 13, 14, 30, 31, 32, 33, 44, 45	E
		INSPECT				0.80		11	A
		TEST				2.20		02, 03, 04, 05 11	H
		REPAIR				11.90		02, 03, 04, 05, 06, 11	G
		OVERHAUL					33.80	02, 03, 04, 05 06, 07, 08, 09 11, 13, 18, 19, 44, 45, 47	F
01	AC INPUT CCA (PN SM-D-884579)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				1.20		02, 03, 05, 06, 11	HT2
02	MULTI VDC CCA (PN SM-D-884567)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				1.20		02, 03, 05, 06, 11	HT2
03	5 VDC CCA (PN SM-D-884593)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				1.20		02, 03, 05, 06, 11	HT2

Section II. MAINTENANCE ALLOCATION CHART—Continued

GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGORY C	O	F	H	D	TOOLS AND TE	REMARKS
04	DIPULSE CCA (PN SM-D-875971)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				1.20		02, 03, 05, 06, 11	HT2
05	DIPHASE A CCA (PN SM-D-875969)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				2.20		02, 03, 05, 06, 11	HT2
06	BIPOLAR MODEM CCA (PN SM-D-875972)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT					0.10	--	DT1
		TEST					0.30	02, 03, 05	DT5
		REPAIR					2.20	02, 03, 05, 06, 11	DT4
07	BITE 1 CCA (PN SM-D-875948)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.40		03, 04, 05	HT3
		REPAIR				3.70		03, 04, 05, 06, 11	HT2
08	DIPHASE B CCA (PN SM-D-875992)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		--	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				1.20		02, 03, 05, 06, 11	HT2
09	CABLE ORDERWIRE CCA (PN SM-D-875991)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT					0.10	--	DT1
		TEST					0.30	02, 03, 05	DT5
		REPAIR					1.20	02, 03, 05, 06, 11	DT4

Section II. MAINTENANCE ALLOCATION CHART—Continued

GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGORY C	O	F	H	D	TOOLS AND TE	REMARKS
10	CASE ASSEMBLY, ELECTRICAL EQPT. (PN SM-D-875967)	INSPECT			0.50			11	FT1
		TEST			0.30			03, 09, 11	FT2
		REPAIR			0.80			03, 11	FT3
		INSPECT					0.40	11	DT1
		TEST					1.70	03, 11	DT2
		REPAIR					3.50	03, 06, 07, 08, 11	DT3
1001	ELECTRONIC COMPONENTS ASSEMBLY (PN SM-D-884378)	INSPECT			0.10			11	FT1
		INSPECT					0.10	11	DT1
		TEST					0.20	03, 11	DT2
		REPAIR					0.70	03, 06, 08, 11	DT3
1002	CONNECTOR ASSEMBLY, REAR (PN SM-D-875973)	INSPECT			0.10			11, 44, 45	FT1
		REPAIR			0.80			03, 11, 44, 45	FT3
		REPLACE			0.40			11, 44, 45	FT4
		TEST			0.30			03, 11, 44, 45	FT2
		INSPECT					0.10	11, 44, 45	DT1
		TEST					0.30	03	DT2
		REPAIR					0.80	03, 06, 08, 11, 44, 45	DT3
1003	CONNECTOR ASSEMBLY, ELECTRICAL (PN SM-D-876352)	INSPECT			0.10			11	FT1
		INSPECT					0.10	11	DT1
		TEST					0.30	03, 11	DT2
		REPAIR					0.60	03, 06, 07, 08, 11	DT3
1004	CONNECTOR ASSEMBLY, POWER SUPPLY (PN SM-D-984810)	INSPECT			0.10			11	FT1
		INSPECT					0.10	11	DT1
		TEST					0.30	03, 11	DT2
		REPAIR					0.60	03, 06, 08, 11	DT3

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR MULTIPLEXER MD-1026(P)/G

TOOL OR TEST EQUIPMENT REF. CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER
02	H, D	TEST STATION, ELECTRONIC EQUIPMENT, AN/USM-410 (XE-3) WITH INTERFACE ADAPTERS	6625-00-614-9535
03	F, H, D	MULTIMETER DIGITAL AN/PSM-45**	6625-01-139-2512
04	H, D	DIGITAL CARD TESTER, AN/USM-465A WITH INTERFACE ADAPTERS	6625-01-126-2473
05	H, D	OSCILLOSCOPE, OS-261/U (TEK-475)	6625-00-127-0079
06	H, D	BENCH REPAIR FACILITY, PACE PRC-350C**	4940-00-031-4541
07	D	WIREWRAP TOOL, GARDNER DENVER, 14 x A2 W/SLEEVE, BIT AND UNWRAPPING TOOL FOR AWG 30 WIRE	---
08	D	CONTACT TOOL KIT	---
09	O, F, D	BITE CAPABILITY	---
10	O	TOOL KIT, ELECTRONIC EQUIPMENT, TK-101/G	5180-00-064-5178
11	H, F, D	TOOL KIT, ELECTRONIC EQUIPMENT, TK-105/G*	5180-00-610-8177
12	F	DIGITAL DATA GENERATOR, SG-1139( )/G	---
13	F, D	TRANSMISSION TEST SET HP-3551A	6625-01-062-0176
14	F	BREAKOUT TEST CABLES, G285554-1	
18	D	DSVT SIMULATOR	
19	D	GROUP SIMULATOR SDG 210963	
30	F	SIGNAL GENERATOR, HP-8660C Opt. 001, 3	6625-01-003-7414
31	F	RF PLUG-IN, HP-86601A	6625-01-008-2166
32	F	AUXILIARY PLUG-IN, HP-86631B	6625-00-356-3172
33	F	PULSE GENERATOR, SG-1105, (HP-8013B)	6625-01-010-3524
44	F, D	SCREWDRIVER, PHILLIPS, NO. 4	5120-00-224-7375
45	F, D	WRENCH, OPEN END, 1/2	5120-00-187-7124
47	D	TEST BREAKOUT CABLES	
		*ITEM 11, ADDITIONAL HAND TOOLS REQUIRED, NOT SUPPLIED IN TK-105/G: SOCKET WRENCH SET	5120-00-542-5799
		**OR AIR FORCE EQUIVALENT	

Section IV. REMARKS FOR MULTIPLEXER MD-1026(P)/G

REF CODE	TASK	REMARKS
		UNIT LEVEL MAINTENANCE TASKS (DETAILED)
A	INSPECT	VISUALLY INSPECT UNIT/ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC. USE AUTHORIZED TOOL KIT (TK-101/G OR TK-105/G), NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY.
B	SERVICE	SERVICE EXTERIOR UNIT - CLEAN, DUST, AND REMOVE DIRT, GREASE, FUNGUS, ETC., AS NECESSARY.
C	REPAIR	USING TK-101/G TOOL KIT, REMOVE COVER ASSEMBLY. FAULT LOCATE BY OBSERVING EACH CCA FOR AN ILLUMINATED LED (BITE INDICATION). TEST EXTERNAL LAMP CIRCUITS. CHECK SWITCHES FOR PROPER INDICATION AND FREEDOM OF MOVEMENT. REPAIR OF UNIT LIMITED TO REPLACEMENT OF LAMP BULBS AS REQUIRED. REPLACEMENT OF CCAs IS ADDRESSED AT LOWER INDENT.
D	TEST	USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY, INTERNAL BITE AND AUTHORIZED TEST EQUIPMENT, PERFORM LOOPBACK TESTS, CHECK FRONT PANEL CONTROL AND INDICATORS AND MAKE APPROPRIATE CONTINUITY CHECKS.
E	REPAIR	REPAIR OF UNIT LIMITED TO REAR CONNECTOR ASSEMBLY COMPONENTS AND REPLACEMENT OF DEFECTIVE CCAs, USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY. AFTER REPAIR, TEST UNIT USING INTERNAL BITE AND AUTHORIZED TEST EQUIPMENT.
F	OVERHAUL	OVERHAUL OF UNIT AT DEPOT CONSISTS OF THE INSPECTION, TEST, AND REPAIR/REPLACEMENT OF CASE ASSEMBLY MOUNTED COMPONENTS AND CONNECTOR ASSEMBLY COMPONENTS AND THE REPLACEMENT OF ALL CIRCUIT CARD ASSEMBLIES. THE OVERHAUL OF THIS UNIT MAY USE ALL AUTHORIZED TOOLS AND TEST EQUIPMENT INDICATED ON THIS MAC.
G	REPAIR	USING AN/USM-410 TEST STATION OR AN/USM-465A CARD TESTER AS INDICATED, AN/PSM-45 DIGITAL MULTIMETER AND OS-261/U OSCILLOSCOPE, FAULT LOCATE/TROUBLESHOOT CCA. THEN USING TK-105/G TOOL KIT AND PRC-350C BENCH REPAIR FACILITY, REPAIR CCA REPLACING FAULTY COMPONENTS. TEST ITEM AFTER REPAIR. NOTE: PAINT STRIPPER, ISOPROPYL ALCOHOL AND EPOXY MAY BE USED AS REQUIRED TO STRIP, CLEAN AND TOUCH UP AFFECTED AREAS OF THE CCA.
H	TEST	USING AN/USM-410 TEST STATION OR AN/USM-465A CARD TESTER AS INDICATED, AN/PSM-45 DIGITAL MULTIMETER AND OS-261/U OSCILLOSCOPE, TEST CCA.

Section IV. REMARKS—Continued

REF CODE	TASK	REMARKS
		ORGANIZATIONAL MAINTENANCE TASKS (DETAILED)
OT1	INSPECT	USING TK-101/G TOOL KIT AS REQUIRED, VISUALLY INSPECT CCA OR ASSEMBLY FOR BITE INDICATION, DAMAGE, DEFECTS, CRACKS, CORROSION, ETC.
OT2	REPLACE	USING TK-101/G TOOL KIT, REMOVE COVER ASSEMBLY AS NECESSARY, THEN REMOVE AND REPLACE FAULTY CCAs OR ASSEMBLIES AS REQUIRED.
		DIRECT SUPPORT MAINTENANCE TASKS (DETAILED)
FT1	INSPECT	USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY, VISUALLY INSPECT ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC.
FT2	TEST	USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER, 1/2" OPEN END WRENCH AND AN/PSM-45 DIGITAL MULTIMETER AS NECESSARY, TEST ASSEMBLY MAKING CONTINUITY AND SHORTS MEASUREMENTS. PERFORM INTERNAL BITE CHECKS AS APPLICABLE.
FT3	REPAIR	USING AN/PSM-45 DIGITAL MULTIMETER, FAULT LOCATE ASSEMBLY, MAKING CONTINUITY AND SHORTS MEASUREMENTS. USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY, REPLACE FRONT PANEL COMPONENTS OR CONNECTORS AS REQUIRED. NOTE: REAR CONNECTOR ASSEMBLY REPAIR IS LIMITED TO REPLACEMENT OF MECHANICAL COMPONENTS, (i.e., HANDLES, GASKET MATERIAL, FIELD WIRE POSTS AND COAX CONNECTORS WHERE APPLICABLE).
FT4	REPLACE	USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY, REPLACE ASSEMBLY.
		SRA MAINTENANCE TASKS (DETAILED)
HT1	INSPECT	USING TK-105/G TOOL KIT AS NECESSARY, VISUALLY INSPECT ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC.
HT2	REPAIR	USING AN/USM-410 TEST STATION OR AN/USM-465A CARD TESTER AS INDICATED, AN/PSM-45 DIGITAL MULTIMETER AND OS-261/U OSCILLOSCOPE, FAULT LOCATE/TROUBLESHOOT CCA. THEN USING TK-105/G TOOL KIT AND PRC-350C BENCH REPAIR FACILITY, REPAIR CCA REPLACING FAULTY COMPONENTS. TEST ITEM AFTER REPAIR. NOTE: PAINT STRIPPER, ISOPROPYL ALCOHOL, AND EPOXY MAY BE USED AS REQUIRED TO STRIP, CLEAN, AND TOUCH UP AFFECTED AREAS OF THE CCA.
HT3	TEST	USING AN/USM-410 TEST STATION OR AN/USM-465A CARD TESTER AS INDICATED, AN/PSM-45 DIGITAL MULTIMETER AND OS-261/U OSCILLOSCOPE, TEST CCA.
		DEPOT MAINTENANCE TASKS (DETAILED)
DT1	INSPECT	USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER AND 1/2" OPEN END WRENCH AS NECESSARY, VISUALLY INSPECT ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC. (REFER TO DMWR.)
DT2	TEST	USING AN/PSM-45 DIGITAL MULTIMETER, TEST ASSEMBLY MAKING CONTINUITY AND SHORTS MEASUREMENTS. (REFER TO DMWR.)
DT3	REPAIR	USING TK-105/G TOOL KIT, NO. 4 PHILLIPS SCREWDRIVER, 1/2" OPEN END WRENCH, WIREWRAP TOOL, CONTACT TOOL KIT, PRC-350C BENCH REPAIR FACILITY, AND AN/PSM-45 DIGITAL MULTIMETER AS REQUIRED, REPAIR ASSEMBLY AS NECESSARY. (REFER TO DMWR.)
DT4	REPAIR	USING AN/USM-410 TEST STATION OR AN/USM-465A CARD TESTER AS INDICATED, AN/PSM-45 DIGITAL MULTIMETER AND OS-261/U OSCILLOSCOPE, FAULT LOCATE/TROUBLESHOOT CCA. THEN USING TK-105/G TOOL KIT AND PRC-350C BENCH REPAIR FACILITY, REPAIR CCA REPLACING FAULTY COMPONENTS. TEST ITEM AFTER REPAIR. NOTE: PAINT STRIPPER, ISOPROPYL ALCOHOL, AND EPOXY MAY BE USED AS REQUIRED TO STRIP, CLEAN, AND TOUCH UP AFFECTED AREAS OF THE CCA.
DT5	TEST	USING AN/USM-410 TEST STATION OR AN/USM-465A CARD TESTER AS INDICATED, AN/PSM-45 DIGITAL MULTIMETER AND OS-261/U OSCILLOSCOPE, TEST CCA.

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists components of end item and basic issue items for the GM to help you inventory items required for safe and efficient operation.

C-2. GENERAL

The components of End Item List are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only and is not authority to requisition replacements. These items are part of the end item that requires packaging for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. An illustration is furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the GM in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the GM during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS

The following provides an explanation of columns found in the tabular listings:

a. Column 1, Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column 2, National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column 3, Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

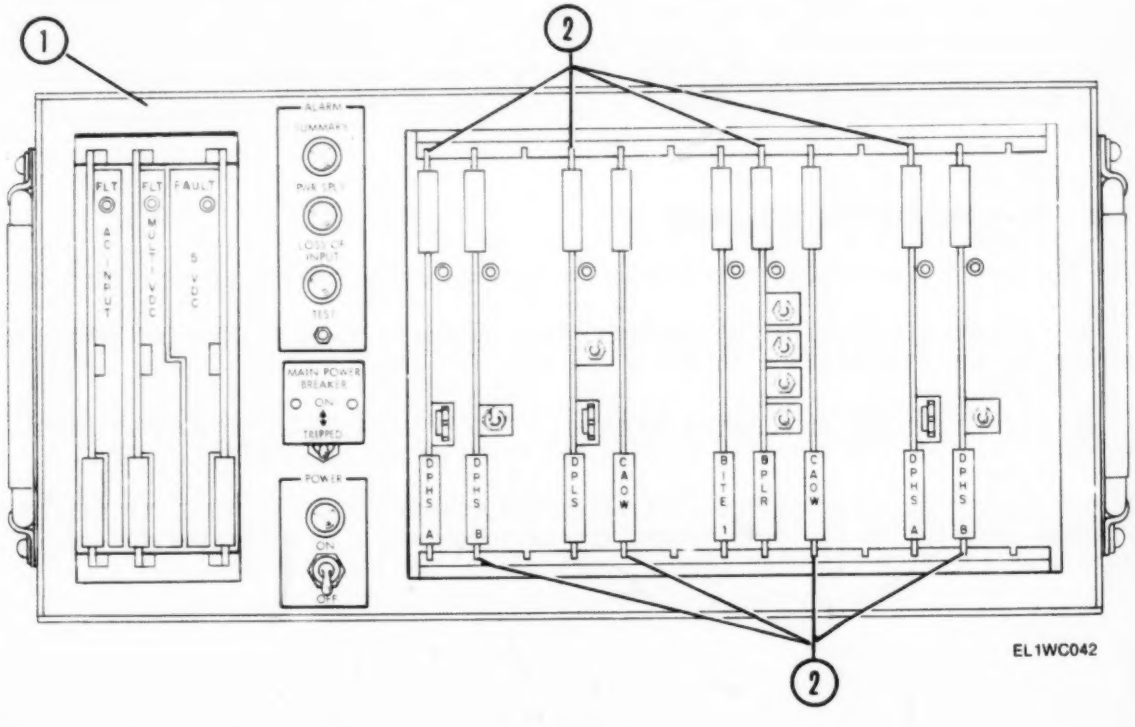
C-3. EXPLANATION OF COLUMNS—Continued

d. Column 4, Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

e. Column 5, Quantity Required (Qty Rqd). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

This listing is for information purposes only and is not authority to requisition replacements. These items are part of the end item that require packaging for transportation or shipment. (Depending upon the use of the equipment in a systems mode, the cards listed may be in various configurations. The types of cards and numbers may vary.) As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. An illustration is furnished to assist you in identifying the items.

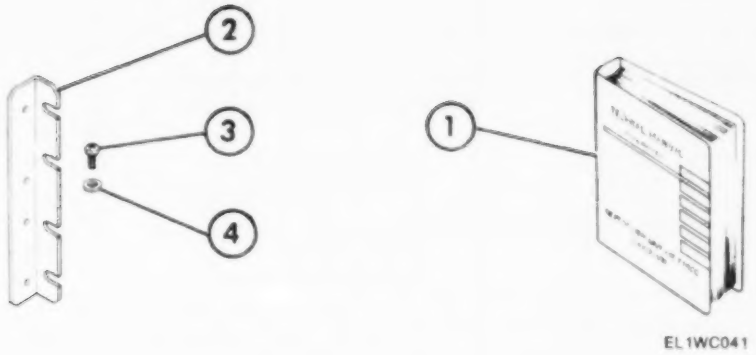


Section II. COMPONENTS OF END ITEM—Continued

(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Max Qty Rqd
1	5820-01-145-4925	Digital Data Modem MD-1026(P)/G	ea	1
2	5820-01-140-1307	Diphase A CCA (SM-D-875969)	ea	4*
	5820-01-140-1308	Dipulse CCA (SM-D-875971)	ea	4*
	5820-01-140-1309	Bipolar Modem CCA (SM-D-875972)	ea	4*
	5820-01-140-1310	Cable Orderwire CCA (SM-D-875991)	ea	4*
	5820-01-140-1311	Diphase B CCA (SM-D-875992)	ea	4*

*Quantity variable to the maximum indicated.

Section III. BASIC ISSUE ITEMS



(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Qty Rqd
1	N/A	Technical Manual TM 11-5805-705-12	Ea	1
2	N/A	Mounting Bracket	Ea	2
3	5305-00-059-3659	Mounting Screw	Ea	8
4	5310-00-619-1148	Flat Washer	Ea	8

APPENDIX E
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the GM. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. EXPLANATION OF COLUMNS

a. Column 1, Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "use cleaning rag, item 2, Appendix E").

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

C ..... Operator or Crew
O ..... Organizational Maintenance
F ..... Direct Support Maintenance
H ..... General Support Maintenance

c. Column 3, National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column 4, Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column 5, Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	0	6850-00-105-3084	Cleaning compound, trichlorotrifluoroethane (80244) MIL-C-81302	Pt
2	0	8305-00-267-3015	Cheesecloth (81348) CCCC440	Yd

GLOSSARY

Word	Meaning
Channel	Individual signals which are multiplexed to form a group.
Conditioned Diphase	A waveform for data transmission designed for simple timing extraction.
Converter	A device used to change a signal from one form to another.
Data	Any or all facts, numbers, letters, symbols, or information that can be processed or produced by a computer.
Demodulation	The process of removing the modulated carrier from the data.
Duplex	Simultaneous two way data flow.
Energize	To activate or turn on.
Fault	Error or indication that something is wrong with the equipment.
Group	More than one channel combined into a single signal.
Malfunction	Error or indication that something is wrong with the equipment.
Modem	A modulation/demodulation device that: 1. Takes signals from sources such as multiplexers and generates waveforms suitable to the transmission medium. 2. Takes signals from the transmission medium and converts that to a form suitable for data processing in demultiplexers.
Modulation	The process of superimposing a data stream on a carrier for transmission purposes.
Multiplexer	A device used to combine two or more signals for transmission over a single channel.
Nonreturn to Zero	A signal having two states termed zero and one, and no neutral or reset condition.
Orderwire	A circuit used by maintenance to communicate between facilities.

GLOSSARY—Continued

Word	Meaning
Rectified Ac	Ac current which has been converted into pulsating dc.
Regenerate	The process of rebuilding a waveform to its original shape.
Station Clock	A clock signal originating in the system.
Timing	A signal used to identify bits in a digital stream.

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3-10	3-3		3-1
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		F03	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.

REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hu[illegible], causing strain to the drive train. Hunting [illegible] minimized by adjusting the lag to 2° without [illegible]radation of operation.

Item [illegible]ion column. Change "2 dB" to "3 dB."

REASON: The adjustment procedure the TRANS POWER FAULT indicator calls f[illegible] a 3 dB (500 watts) adjustment to light the TRANS POWER [illegible]LT indicator.

Add new step f.1 to read, "Replace cover plate removed in step e.1, above."

REASON: To replace the cover plate.

Zone C 3. On J1-2, change "+24 VDC" to "+5 VDC."

REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

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I. M. DeSpiritof

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